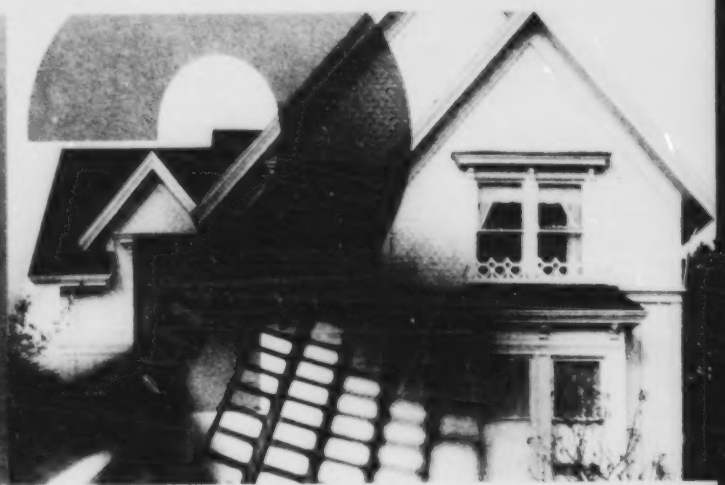
CURRENT HOUSING RESEARCH

VOLUME 9, NUMBER 1

SUMMER 2002

SOCIAL, ECONOMIC AND TECHNICAL RESEARCH



CMHC SCHL

HOME TO CANADIANS

Canada

CURRENT HOUSING RESEARCH

Volume 9 Number 1
Summer 2002

Issued also in French under the title: ***Recherches courantes sur l'habitation***

Publié aussi en français sous le titre: ***Recherches courantes sur l'habitation***

CURRENT HOUSING RESEARCH ORDER FORM

If you wish to receive any of the completed reports or bibliographies listed, or if you would like to be on the mailing list to receive *Current Housing Research*, please fill out this form and send it to:

Canadian Housing Information Centre
Canada Mortgage and Housing Corporation
700 Montreal Road
Ottawa ON K1A 0P7
Fax (613) 748-4069
Telephone 1-800-668-2642
Email: chic@cmhc-schl.gc.ca

COMPLETED REPORTS REQUESTED

BIBLIOGRAPHIES REQUESTED

☐ Send copies of above reports/bibliographies

☐ Add my name to your mailing list to receive *Current Housing Research*

Name		
Mailing Address		
City	Province	Postal Code

INTRODUCTION

Welcome to "*Current Housing Research*". This publication merges "*Housing Research Quarterly*" and "*Current Housing Technology Initiatives*" and continues the numbering of the "Housing Research Quarterly".

Under Part IX of the National Housing Act the Government of Canada provides funds to Canada Mortgage and Housing Corporation to conduct research into the social, economic and technical aspects of housing and related fields.

Current Housing Research is compiled and produced three times a year by the Canadian Housing Information Centre. This publication provides information and access to research which is undertaken and sponsored by the Corporation. It is also available on CMHC's Website at chic@cmhc-schl.gc.ca

The publication contains information on completed research reports, new publications, videos and bibliographies, as well as planned and ongoing research projects. An alphabetical title index of items listed is included at the end for quick reference.

The overall arrangement of "*Current Housing Research*" is by broad subject category. Within each subject category, lists of planned and ongoing projects and completed research reports are described.

Each entry can contain the following elements:

- The project or report title;
- A description of the project or report results;
- The CMHC Project Officer who is managing the project;
- The Division within CMHC which is responsible for the project;
- For External Research Projects, the grant recipient undertaking the research;
- A Contract Identification Number (CIDN);

- The Status of the project: whether the project is in a planned, ongoing or completed phase. "Planned Projects" are those that are not yet underway, but are likely to be initiated in the current year. "Ongoing Projects" refer to research projects which are currently underway. No reports are yet available. Once the project is completed, and a report is available for distribution, it will be listed as a "completed report."

- Whether the report resulting from the research project is available and the address where the completed report can be obtained.

To discuss research projects that are recent or ongoing, please call CMHC General Inquiries at (613) 748-2000 and ask for the CMHC Project Officer identified under each project description.

102-06260/

CMHC·S EXTERNAL RESEARCH PROGRAM

The objective of the CMHC External Research Program (ERP) is to encourage and enable researchers in the private and not-for-profit sectors to put forward and carry out relevant, innovative, and high quality housing research projects. Under the Program, financial contributions are made to support research investigations into important questions, problems, and issues affecting Canadian housing. Housing research priority areas are identified in the "External Research Program Grants for Housing Research Guidelines and Application Form".

Applicants to the External Research Program must be Canadian citizens or have permanent resident status in Canada.

Independent researchers as well as those employed in Canadian universities, institutions, private consulting firms, the professions and the housing industry may apply for these grants.

Full-time students at the graduate or undergraduate level are not eligible to apply. Students may be hired to assist in the conduct of the research, but under no circumstances may they take over responsibility for the direction of the work or the quality of the final report.

Individuals who are full-time federal, provincial or municipal government employees may apply. However, to be eligible, an applicant must provide a letter of support from her/his employer which shows that the proposed research is not part of, and will not interfere with, her/his regular work. CMHC employees are not eligible to receive grants under this Program.

CMHC is interested in receiving applications on topics related to its housing research priority areas. New ideas and innovative approaches in these areas are welcome.

To obtain the booklet outlining the priority research areas, the guidelines and application form for the External Research Program you may contact:

The Administrator
CMHC External Research Program
Research Division
Canada Mortgage and Housing Corporation
700 Montreal Road, Room C7-307
Ottawa, Ontario
K1A 0P7
Telephone: 613-748-2249
Fax: 613-748-2402
E-mail: erp@cmhc-schl.gc.ca

TABLE OF CONTENTS

	PAGE
Order Form	1
Introduction	2
Subject Index	5
Technical research	7 - 56
Social and Economic Research	57 - 94
Bibliographies	95 - 99
Title Index	100 - 109

SUBJECT INDEX

Aboriginal Housing 7, 59
Acoustics 9
Basements, Foundations & Crawl Spaces . 9
Building Codes & Standards 10
Building Materials 11
Children's Environments 62
City Planning and Human Settlements .. 63
Concrete 12
Consumer Protection 64
Contaminated Lands 13
Co-operative and Non-profit Housing ... 64
Discrimination in Housing 74
Doors and Windows 13
Energy Conservation 14
Fires & Fire Prevention 19
Heating and Ventilation 20
High-Rise and Multiple Unit Construction 23
Home Ownership 32, 66
Homelessness 66
House Construction 32
House Construction Industry 68
Housing 70
Housing Affordability 72
Housing and Immigration 74
Housing and Taxation. 74
Housing Design 35
Housing Export Opportunities 75
Housing Forecasting and Demand 78
Housing Market 78
Housing Research. 79
Indoor Environment 37
Manufactured Housing 40
Moisture and Mold 41
Mortgages and Housing Finance 80
Northern Housing 43
Persons with Disabilities 80
Population Health 82
Property Management 48
Regulatory Reform 82
Renovation and Inspection 49, 83
Rental Housing 84
Residential Development 86
Seniors 86
Social Housing 89
Sustainable Development & Healthy Housing 52, 89
Water Conservation, Reuse & Management 53
Women and Housing 92
Youth and Housing 92

TECHNICAL RESEARCH

ABORIGINAL HOUSING: LOCAL DESIGN AND MATERIAL

This project responds to opinion that house designs found in Aboriginal communities are inappropriate and that perfectly good building materials exist on reserve but are never used. The project assumes that in fact there are a significant number of examples where appropriate designs have been put in place and where the potential use of local material has been investigated. The project will identify these examples, and document a selected number of them as case studies. The case studies will produce material suitable for dissemination.

The general approach is:
-- to build an inventory of past initiatives on increasing the Aboriginal relevance of housing design and on assessing the feasibility of using local materials;
-- to select a range of examples from the inventory for case study analysis; and
-- to draw conclusions along the lines of "lessons learned".

CMHC Project Officer : *Phil Deacon*
Division : Policy and Research *Division*
AVAILABILITY : Product is not yet available

CIDN : N/A
STATUS : Ongoing

DEMONSTRATION OF HEALTHY HOUSING ON RESERVE

This project is being undertaken in partnership with First Nations communities. The objectives are to support the design, construction and demonstration of five on-reserve Healthy Houses near Montreal, Belleville, Thunder Bay, Winnipeg, and on band land in N'Dilo and Dettah near Yellowknife. To date, four houses have been built and demonstrated in the following communities - Kanawake QC, Eagle Lake ON, Roseau River MB, plus several micro-sewage treatment systems in NT. Native communities own and occupy these demonstration houses, which were constructed by locally trained trades and specialists. A goal of the project was to better equip First Nations community and other decision makers, and the public to understand the importance of constructing more affordable, appropriate and environmentally sustainable housing. A CMHC report will be produced detailing house costs and benefits, designs and systems at the completion of the project. An About Your House summary has already been published which describes the Eagle Lake Healthy House and its matching "EcoNomad" utilities container. A 30 minute video has also been prepared which describes the Kanawake Healthy House and their plans to build a "sustainable subdivision" of 27-35 homes on a ten acre "ecovillage" site. The Tyendinaga Mohawks (near Belleville ON) have already built four Granny Houses and five Seniors homes which meet Healthy Housing IAQ goals (Indoor Air Quality). This community is now preparing to design and build a "sustainable subdivision" of some 36 homes. The N'Dilo and Dettah communities have installed micro-sewage systems in a number of homes, following the demonstration and testing of a prototype micro-system in a single family house. The performance of these micro-systems is now being monitored in collaboration with the NWT Housing Corporation and an evaluation report has been prepared by UMA Engineers under contract to the City of Yellowknife.

CMHC Project Officer : *Chris Ives*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : N/A
STATUS : Ongoing

FIRST NATIONS HEALTHY HOUSING SUSTAINABLE COMMUNITY DEVELOPMENT SYMPOSIUM, AND UPDATE OF THE 'BEST PRACTICES' PUBLICATION

This project's objective is to organize and facilitate a two day First Nations Healthy Housing and Sustainable Community Development Symposium and to update the 'Best Practices' publication.

CMHC Project Officer : *Alain Croteau*
Division : Assisted Housing Division
AVAILABILITY : Product is not yet available

CIDN : 2497 1500002
STATUS : Ongoing
NEW

NATIVE INSPECTION SERVICES INITIATIVE (NISI) GUIDE

Over the years, First Nations throughout Canada have become increasingly interested in being involved in inspecting renovations and new homes in their territories. To address this desire, CMHC developed the Native Inspection Services Initiative (NISI) in 1995, to provide greater First Nation involvement in inspections for CMHC programs and to help build First Nation inspection capacity. Building inspection capacity is an important step in improving First Nations' housing quality.

This Guide explains the requirements of NISI and is a reference guide to inspection for NISI inspectors and organizations. CMHC will continually update the Guide and plans to put the Guide and updates to it on the CMHC web site.

Developed by the Southern First Nations Secretariat, Ontario. CMHC Project Officer: Alain Croteau. Ottawa: Canada Mortgage and Housing Corporation, 2001. 90 pages

NOTE : Aussi disponible en français sous le titre : Guide sur l'initiative des services d'inspection autochtones (ISIA)

STATUS : New Completed Report
AVAILABILITY : On a loan basis from the Canadian Housing Information Centre

SUSTAINABLE COMMUNITY SITE PLAN, INFRASTRUCTURE PLAN AND HEALTHY HOUSE DESIGNS

The objective of this project is to develop a sustainable community site plan, infrastructure plan and healthy house designs for approximately thirty homes in cooperation with the community of Tyendinaga. The intention of this project is to demonstrate that when alternative infrastructure options, land use patterns and high performance homes are explored simultaneously as an integrated design solution that improvements can be made in all these categories without an overall price increase. The integrated participatory design process will include community workshops involving both the immediate community as well as the broader Ontario First Nations community and design professionals. The results of the workshops and the resulting community and house designs will be published in a report and the first healthy high performance home will be available for public viewing for a period of one year.

CMHC Project Officer : *Doug Pollard*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2408 0200001
STATUS : Ongoing
NEW

ACOUSTICS

NOISE ISOLATION PROVIDED BY GYPSUM BOARD PARTITIONS

The objective of this project was to analyze the results of 350 sound transmission tests conducted on gypsum board partitions of various compositions. The results of these tests were published in report no. 761 produced by the Institute for Research in Construction of the National Research Council of Canada. This report conveys the conclusions of the analysis; it highlights the main factors influencing the performance of gypsum board partitions: the gypsum boards themselves, the studs and stud arrangements, the resilient furrings, and the sound absorptive materials inserted in the cavity.

Prepared by MJM Acoustical Consultants Inc. Prepared for Research Division, Canada Mortgage and Housing Corporation. CMHC Project Officer: Jacques Rousseau. Ottawa: CMHC, 2002. 169 pages

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre

BASEMENTS, FOUNDATIONS & CRAWLSPACES

COMPREHENSIVE STUDY ON SLAB-ON-GRADE FOUNDATIONS

The purpose of this project is to investigate and provide answers to technical questions on slab-on-grade insulation, moisture protection, and heating systems appropriate to be used with such a foundation type, and cost effectiveness in various climate regions of Canada. Other aspects to be studied will be: consumer acceptance of this type of "basementless" house; alternate layout designs to accommodate storage; overall pros and cons of the alternative house foundation type.

CMHC Project Officer : *Ken Ruest*

CIDN : 2275 0200

Division : Policy and Research Division

STATUS : Planned

AVAILABILITY : Product is not yet available

INSULATED CONCRETE FORMS TRAINING PROGRAM

This is a multi-partnered project led and managed by the Cement Association of Canada (CAC). Participants include the Portland Cement Association (PCA), Insulating Concrete Form Association (ICFA), National Energy Conservation Association (NECA), Alliance of Canadian Building Officials Association (ACBOA), Association of Canadian Community Colleges (ACCC), Seneca College, Southern Alberta Institute of Technology (SAIT), Atlantic Home Builders' Training Board (AHBTB), Canadian Carpentry Union, CHBA, NRCan and CMHC. The purpose of this project is to develop and pilot a course curriculum and course training materials on how to properly construct insulated form foundation and building systems (ICFs). The course will consist of two modules; Introduction to Insulated Concrete Form Construction, and Fundamentals of Concrete Footings and Foundations. It will be promoted to ICF installers, home builders, home inspectors, building officials, and the trades involved in the installation of ICFs. The course will be developed and piloted in two phases over a two year period from 2000 to 2002 and the third phase will be implementation of the training program into various educational institutions across the country in 2002-2003. The training materials for the two modules have been drafted and the pilots have begun. Once the pilots are completed the materials will be finalized based on the feedback from the participants and instructors. Discussions with educational institutions are also underway.

CMHC Project Officer : *Darrel Smith*

CIDN : 2411 0200001

Division : Policy and Research Division

STATUS : Ongoing

BASEMENTS, FOUNDATIONS & CRAWLSPACES

PERFORMANCE GUIDELINE DEVELOPMENT FOR BASEMENT SYSTEMS AND MATERIALS

CMHC is a participant contributing research to this multi-disciplinary, multi-agency study led by the National Research Council identifying knowledge gaps in the performance of basement systems. Field work is complete and guidelines are being developed for design, construction and evaluation of basement materials and systems to ensure their durability and long-term performance. CMHC will look into ways to inform builders and the public about better basement designs.

CMHC Project Officer : *Don Fugler* ***CIDN*** : 1421 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PRACTICAL MEASURES FOR THE PREVENTION OF BASEMENT FLOODING DUE TO MUNICIPAL SEWER SURCHARGE

This External Research Program (ERP) project is to study practical measures currently available to homeowners experiencing basement flooding due to sewer surcharges. The research will include a survey of municipalities to discover how commonly this type of flooding occurs. The consultants will also analyze existing devices or measures to prevent sewer surcharge, and to draft advice for householders and builders on the more successful solutions identified.

CMHC Project Officer : *Don Fugler* ***CIDN*** : 2437 0200010
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

BUILDING CODES

DEVELOPMENT OF TRANSITION TRAINING FOR OBJECTIVE-BASED CODES

Under the auspices of the Canadian Commission on Building and Fire Codes (CCBFC), CMHC is contributing to a partnership of National Building Code stakeholders to develop training and education curricula and course content which will include training validation and pilot testing. Content will provide for training on the structure and new information to be included in the 2004 objective-based code, on the evaluation of alternative solutions to be allowed under objective-based codes (e.g., using sprinklers in lieu of fire separations), on assessment criteria to allow for transferability of alternatives and their impact on other code requirements, on preparation of knowledge tests, on development of an instructor's guide, and on pilot testing. As provincial, territorial and municipal code enforcement officials have the most comprehensive information requirements, material will be developed at their level and then adapted by other stakeholder groups to meet their needs. This project will develop according to the following schedule: Year 2002 - Training needs assessment, Year 2003 - Development of training material, Year 2004 - Pilot-test and finalize training material.

CMHC Project Officer : *Darrel Smith* ***CIDN*** : 2700 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Seminar/training is not yet available ***NEW***

BUILDING CODES

REWRITING TEST STANDARD CAN/CGSB-149.10 - DETERMINATION OF THE AIRTIGHTNESS OF BUILDING ENVELOPES BY THE FAN DEPRESSURIZATION METHOD

The airtightness standard used for testing houses dates back to 1986. The object of this project is to re-write CAN/CGSB-149.10, incorporating some updates and some alternative techniques. There have been no meetings up until now but there has been extensive consultation by e-mail and document review. Progress has been delayed due to the lack of consensus by committee members. The contractor who assembled the new draft of the document is looking into modifications of the text to satisfy some of the objections.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1971 0200002
STATUS : Ongoing

BUILDING MATERIALS

COMPOSITE MASONRY WALL TIES: FINAL REPORT

This project aimed at developing a prototype masonry tie using composite materials, which would fulfill structural requirements, be immune to corrosion and manufactured at a lesser cost. The project originated from the fact that current galvanized masonry ties do not meet new standards. The alternative, stainless steel ties are 80% to 100% more expensive.

Several prototypes were developed and tested, concluding that an adjustable tie can be manufactured from glass fibre reinforced polymer composite (GFRPC). Specifically, the most promising tie would be used between masonry veneer and a concrete block backup wall system with 50 mm air space and 50 mm rigid insulation. The investigator made prototypes that meet current standards and show promise that they could be manufactured competitively.

Prepared by Vera Straka, Dept. of Architectural Science, Ryerson University. CMHC Project Officer: Luis de Miguel. Ottawa: Canada Mortgage and Housing Corporation, 2002. (External Research Program Research Report) 51 pages

NOTE: No. 02-109 in the Research Highlights Technical Series summarizes the results of the research and is available on the CMHC web site

STATUS : New Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

BEST PRACTICE GUIDE FOR PRE-CAST CONCRETE WALLS

The objective of this project is to develop a practical, advisory document for designers, architects and engineers, and manufacturers, related to precast wall panels in residential applications. Precast is a well developed system in commercial applications but it requires special treatment when used in housing. The project will be conducted in partnership with the Canadian Precast and Prestressed Concrete Institute, installers and their associations. This Guide will be produced as a joint publication through a collaborative project with Public Works Government Services Canada. The Guide, produced in hard copy and CD-ROM format, will address: pertinent building science with emphasis given to aspects particular to precast walls, construction details in AutoCAD format, outline specifications and additional sources of information and references.

CMHC Project Officer : *Luis de Miguel*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2215 0200001
STATUS : Ongoing

STANDARDIZATION OF CONCRETE REPAIR PROTOCOLS

This study was initiated to address concerns raised at a round-table discussion convened by Canada Mortgage and Housing Corporation to discuss concrete deterioration and repair issues for buildings. It was generally agreed that there is no consistent approach to concrete investigations and repairs and that the development of an assessment and repair protocol would be beneficial. In achieving a concrete repair protocol, the first step is to identify the state-of-the-art and the current practice for investigation, repair and monitoring strategies. State-of-the-Art is considered to be the highest level of technology in the field at this time and Current Practice is considered to be the procedures that are in general or prevalent use by most consultants. This project will research current assessment, monitoring and repair strategies for concrete repair employed by engineering consulting firms commonly involved in concrete investigation and restoration projects . Existing protocols commonly used in the field as well as existing protocol guidelines assembled by various agencies (e.g. CSA) will be catalogued. This project is expected to be completed by end of summer 2002.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1890 0200002
STATUS : Ongoing

CONTAMINATED LANDS

DEMONSTRATION OF SAFE HOUSING ON LIGHTLY CONTAMINATED LANDS

CMHC research into contaminated lands shows that some types of soil contaminants could be rendered innocuous through building design and operation. One example is heavy metals deep within the soil. If these pollutants can be avoided through design, the cost of land remediation could be greatly reduced. The project will include contaminant monitoring and the investigation of the predictive capabilities of site specific risk assessments. Two of the three case studies are complete: a potential soil gas movement problem in a Vancouver high-rise and heavy metals moving from fill in the vicinity of Wells, BC. A third potential location has been identified in the Yukon. Testing will have to follow construction of the houses, which may not take place until 2003.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1946 0200001
STATUS : Ongoing

DOORS AND WINDOWS

LEAK-PROOFING WINDOWS, PHASE I - FABRICATION, INSTALLATION AND MAINTENANCE

Recent CMHC surveys including "The Survey of Building Envelope Failures in the Coastal Climate of British Columbia" and "Wall Moisture Problems in Alberta Dwellings" revealed that exterior moisture penetration through and/or around windows (at window wall interfaces) is a significant contributor to the envelope moisture problem. The objective of this project is to undertake a study which identifies the nature and causes of moisture ingress problems associated with windows and window to wall interfaces. The study will answer four key questions: 1. What are the important leakage paths associated with windows? 2. What are the primary causes of these leakage paths? 3. What are the key improvements that need to be made to address these leakage paths and causal factors? and 4. What industry sector can best address these improvements? This project, funded by Canada Mortgage and Housing Corporation in partnership with the Homeowner Protection Office and British Columbia Housing Management Commission, is expected to be completed by the end of summer 2002.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2285 0200001
STATUS : Ongoing

DOORS AND WINDOWS

LEAK-PROOFING WINDOWS, PHASE II - A REVIEW OF STANDARDS TESTING AND CERTIFICATION

Recent CMHC surveys including "The Survey of Building Envelope Failures in the Coastal Climate of British Columbia" and "Wall Moisture Problems in Alberta Dwellings" revealed that exterior moisture penetration through and/or around windows (at window wall interfaces) is a significant contributor to the envelope moisture problem. The objective of this research project, funded by Canada Mortgage and Housing Corporation in partnership with the Homeowner Protection Office and the British Columbia Housing Management Commission, will be to conduct a detailed review of the Canadian Window Standard CSA A440, together with all its attachments, to review the test requirements related to moisture penetration as outlined in the standards, and to review, assess and evaluate the window certification programs and processes. This research project will identify recommended solutions and opportunities for alleviating these moisture problems into the wall assembly from the window/wall interface. This study will complement a companion study "Leakproofing Windows, Phase I - Fabrication, Installation and Maintenance" in which the primary window leakage paths and causal factors are identified from insitu window-wall performance records.

The CSA A440 Window Standards Committee is considering the adoption of and harmonizing with the North American Fenestration Standards (NAFS). This project will also attempt to consolidate the potential impact that NAFS may have on the performance of windows if adopted by the window standards committee.

This work is underway and is anticipated to be completed by the end of 2002.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2425 0200001
STATUS : Ongoing

ENERGY CONSERVATION

ALTERNATIVE HOME ENERGY SOURCES FOR THE NORTH

This is a partnership project between Alaska Housing Finance Corporation, Arctic Energy Alliance and CMHC. Access to alternate energy in the North was an important issue identified in the 1998 Client Consultation. While much literature exists on alternative home energy sources, most of it is too complex for general comprehension. Further, much of this information has not been verified for applicability to the North including availability and performance of alternative energy products in the North. This project will provide a full summation of options, a cost benefit analysis based upon present individual utility infrastructures and costs as well as regional climatic requirements, reference and contact information.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2312 0200003
STATUS : Ongoing

ANALYSIS OF THE IMPACT OF ENERGY EFFICIENCY MEASURES IN MULTI-UNIT RESIDENTIAL BUILDINGS

An energy and greenhouse gas emission simulator will be developed to model the impacts of energy efficiency measures on large buildings. The energy simulator will be capable of analyzing the impact of individual, or packages of, energy efficiency measures on the energy consumption and green house gas emissions of large commercial and multi-unit residential buildings. Regional and national energy and green house gas emission reductions will be assessed by using the simulator to evaluate the impact of energy efficiency measures on the buildings in a representative building database. The results of the analysis will then be projected to national levels to determine the extent of retrofit measures that are required within the building stock to meet the reduction targets set by the Kyoto Protocol in December 1997.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2249 0200001
STATUS : Ongoing

CASE STUDIES OF MAJOR HOME ENERGY RETROFITS

To meet targets for greenhouse gas production in Canada, the residential sector will have to significantly reduce energy consumption in existing houses. A 1995 CMHC report suggested that houses built prior to 1989 will have to reduce energy consumption on average by about 40%. This is a big reduction, one that is rarely realized in programs funded by government or the utilities. The object of this research is to see whether four or more relatively normal houses can have their total energy usage reduced by 40%. Saskatchewan Research Council has been hired to determine this. The houses have been selected and the retrofits contracted by the owner were completed by December 2001. The next year of monitoring should establish whether the 40 % goal can be achieved.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2349 0200001
STATUS : Ongoing

CHARACTERIZATION OF ENERGY AND WATER END-USE LOAD PROFILES IN HOUSING: LITERATURE REVIEW

CMHC, in cooperation with Natural Resources Canada, is in the process of conducting a literature review of energy and water end-use load profiles, interior heat gain, monitoring and analysis methodologies in residential buildings. The objective of this project is to identify what data is available on energy and water end uses so that the available data can be compiled and future monitoring projects can be formulated to supplement existing information. CMHC has engaged the Centre for Residential Energy End Use Data Analysis Centre from Dalhousie University to conduct the literature search. This work will clearly identify research projects, data, monitoring protocols and published information relating to energy and water load profiles of housing. Based on the outcome of this project, CMHC and NRCan will be able to identify sources of load profile data to construct energy and water load profiles on a 15 minute basis and will be able to organize research projects to gather load profile data where it does not currently exist.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2201 0200002
STATUS : Ongoing
NEW

ENERGY EFFICIENCY CASE STUDIES OF MULTI-UNIT RESIDENTIAL BUILDINGS

CMHC is in the process of documenting the application of energy efficiency measures in multi-unit residential buildings to be used as case studies. A trial case study of a housing co-operative in Ottawa is underway, to not only assess the strengths and weaknesses of the energy efficiency measures implemented, but also to identify what information can be disseminated to others in the building industry. Upon completion of this first case study, CMHC will be soliciting the housing industry for additional energy efficiency case studies. A compendium of case studies will be made available from CMHC. The case studies will also support the Energy Efficiency Opportunities Manual for Multi-Unit Residential Buildings that CMHC is in the process of developing. The case studies currently underway include:

1. Conservation Co-op, Ottawa
2. Dual Fuel Heating System, Oshawa
3. Energy Efficiency Retrofit of an Apartment Building, Toronto
4. Case Studies of Interior Insulation Retrofits in Buildings with Solid Masonry Walls (CMHC "A" Building, Ottawa; Lofts Corticelli, Montréal; Karcher Building, Prince Albert)
5. The Complete Rehabilitation of the Broadview Apartment building.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 1899 0200002-3
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ENERGY EFFICIENCY OPPORTUNITIES MANUAL FOR MULTI-UNIT RESIDENTIAL BUILDINGS

CMHC, in partnership with the Ontario Ministry of Municipal Affairs and Housing (OMMAH), has developed a manual that details energy and water efficiency measures for existing multi-unit residential buildings. The document is based on a manual originally developed by the Ontario Ministry of Housing in the early 1980's. The new manual offers proven, current energy efficiency measures for the building envelope, mechanical, electrical, and domestic hot water heating systems. A web-based version of the manual has been developed that has been installed on the CMHC web-site. Individual energy and water efficiency measures have been placed on the high-rise website as they are developed. The measures have been publicized as the energy and water efficiency "Tip of the Week" (http://www.cmhc-schl.gc.ca/en/imquaf/himu/wacon/waensatip/index.cfm). The production of the web-based, and translated, version has also allowed for a simultaneous final editing of the manual in preparation for publication.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 1887 0200002
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ENERGY GENERATION AND CONTROL AT THE BUILDING ENVELOPE OF MULTI-UNIT RESIDENTIAL BUILDINGS

This project's objective is to evaluate strategies to reduce, generate or recover and redistribute energy at the building envelope of multi-unit residential buildings.

CMHC Project Officer : *Sandra Marshall* ***CIDN*** : 2521 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

ENERGY USE OF STRAW BALE BUILDINGS WITH COMPARABLE BUILDINGS OF CONVENTIONAL CONSTRUCTION

This survey compares the measured energy consumption of straw bale buildings with similar buildings of conventional construction. The contractor examined the billing data of eleven straw bale buildings that used measurable heating energy (gas, oil, or electric). He then modelled conventional buildings of the same interior dimensions built to BC Building Code, using the HOT2000 program. The results show that nine of eleven straw houses studied use less energy than their modelled counterparts, with the average reduction in the order of 20%. These savings are substantially larger than the possible errors due to computer modelling imprecision.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2441 0200003
STATUS : Ongoing
NEW

FINANCIAL TOOLS FOR CO2 REDUCTION

This project responds to Canada's planned Kyoto commitment to take actions that will help reduce CO2 emissions. The research examines a number of financial measures that have been used in Canada and the US to encourage and accelerate the adoption of energy efficiency measures for existing and new housing.

CMHC Project Officer : *Fanis Grammenos*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2281 0200001
STATUS : Ongoing

HYGROTHERMAL MODELLING OF THE INTERIOR INSULATION RETROFIT OF A SOLID MASONRY BUILDING

In 1997, CMHC was involved in the renovation of a building with solid masonry walls. Part of the renovation involved the addition of insulation to the interior of the solid masonry walls. This retrofit technique is contentious within the construction industry as it is thought to cause wall durability problems due to freeze thaw cycles, interstitial condensation and thermally induced stresses. Monitoring of the project shows that the wall systems are thus far performing well. CMHC has engaged a consultant to use a hygrothermal modelling tool to assess the degree to which the tool can track the wall performance monitoring conducted to date and to assess the long-term performance of the retrofitted wall system. If the model can be configured to provide a reasonably accurate assessment of the heat, air and moisture regimes within the wall assembly, the project will be extended to assess the performance of the retrofit strategy under different environmental conditions.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1730 0300005
STATUS : Ongoing
NEW

OPTIMIZING HEAT AND AIR DISTRIBUTION SYSTEMS WHEN RETROFITTING HOUSES FOR ENERGY EFFICIENCY

When a house undergoes energy upgrading, either by improving the envelope or the heating appliance, one factor often overlooked is the heating or ventilating distribution system. With support from the Program for Energy Research and Development (PERD), CMHC will be undertaking research into distribution system upgrades, probably in conjunction with other federal agencies. The first stage of this work is a review of the performance characteristics of current and innovative distribution systems. The review will establish the operating characteristics of HVAC equipment and distribution systems. This includes both old, existing systems; current, off-the-shelf components; and new distribution systems coming on the market. As well, this review identifies problems with the integration of upgraded heating or cooling systems and existing energy distribution systems in houses. The output of this project will help guide the next phases of the work: laboratory studies, field studies, and demonstrations. A draft report on the literature review has been submitted and has been circulated for comment. New funding has been approved to start the field research.

CMHC Project Officer : *Don Fugler*
CIDN : 2440 0200001
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

RETROFITTING A CITY: A GUIDE FOR MUNICIPALITIES TO IMPLEMENT A BUILDING RETROFIT PROGRAM

The primary goal of this project was to help municipalities across North America improve energy efficiency in buildings and reduce their greenhouse gas emissions. Based on Toronto's successful Better Buildings Partnership Program the project produced this useable manual for designing and implementing municipal building retrofit programs to improve water and energy efficiency. Building retrofits can reduce greenhouse gas emissions by lowering energy consumption. Undertaken on a wide scale, retrofitting buildings can enhance the sustainability of urban centres by diminishing air pollution locally and slowing the rate of consumption of natural resources.

Building energy retrofits should follow a process which includes the following steps:
-- Audit: a study of the building and the way it uses energy which leads to a definition of appropriate measures;
-- Implement: the implementation of the measures including engineering, project management, subcontracting, and commissioning;
-- Monitor: the monitoring and tracking of energy savings to be sure they are achieved as expected, and they are sustained.

This process, and the steps on which it is based, are described in detail throughout the manual.

Designed and written by Bob Bach and Marjorie Lamb. Canada Mortgage and Housing Corporation, Enbridge Consumers Gas, and Ontario Power Generation sponsored the project. CMHC Project Officer: Brian Eames. Ottawa: CMHC, 2001. 44 pages

NOTE 1 : Aussi disponible en français sous le titre : Rattrapage éconergétique d'une ville : guide proposant aux municipalités des moyens de mettre en oeuvre un programme de rattrapage des bâtiments

NOTE 2: No. 105 in the Research Highlights Socio-economic Series summarizes the results of the research and is available on the CMHC web site

STATUS : New Completed Report and Research Highlight
AVAILABILITY : Product is available on the web

ENERGY CONSERVATION

SURVEY OF MULTI-UNIT RESIDENTIAL BUILDING CHARACTERISTICS AND ENERGY USE DATA

This project involved the collection of the physical and operational characteristics of 40 multi-unit residential buildings from all regions in Canada. Energy and water consumption histories for the past 2 to 3 years have also been collected for each building. The survey portion of this work is now complete. CMHC has developed a database (HiSTAR) to store the building files and to allow for the comparison of energy and water usage given building age, size, region, fuel type and occupancy. The building files will also be used in combination with an energy simulator-green house gas estimator to estimate the impact of upgrading the stock of multi-unit residential buildings in Canada. The database will be supplemented with additional buildings that CMHC will access in the course of other research projects.

NOTE: No. 01-142 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site. The title is: "Analysis of the Annual Energy and Water Consumption of Apartment Buildings in the CMHC HiSTAR database".

STATUS : Completed **AVAILABILITY :** Research highlight is available

FIRES & FIRE PREVENTION

CLEANING UP YOUR HOUSE AFTER A FIRE

After a Fire is a consumer publication being prepared to help homeowners deal with fire damage in their homes. This publication will explain the issues to be considered to restore the home and to ensure a safe, healthy environment for the occupants. It is intended to be a brief publication targeted to the consumer, but it will also be useful to fire departments, restoration contractors, and insurance companies.

CMHC Project Officer : *Ken Ruest* ***CIDN*** : 2298 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

INVESTIGATION OF SMOKE CONTROL IN HIGH-RISES BY POSITIVE PRESSURE VENTILATION

A research project has been initiated to study the use of positive pressure ventilation (PPV) systems to contain and expel smoke from high-rise buildings during a fire emergency. PPV systems have been used in the U.S. in low-rise buildings. The system consists of a portable, high velocity fan which is used by the fire department to clear smoke from buildings in order to facilitate access to the fire and to aid in occupant evacuation. Preliminary studies have been conducted in multi-unit residential buildings but not in cold climates where stack effect may continue to dominate smoke movement. The research program is the result of a joint venture between CMHC, the City of Ottawa Fire Department and the Fire Laboratory of the Institute for Research in Construction of NRC. The ability of PPV to contain and clear smoke from exitways in high-rise buildings has been evaluated at the Fire Laboratory's full scale test building under both summer and winter conditions. Field testing of the ability of PPV systems to pressurize stairwells in high-rise buildings has also been performed. PPV may offer Fire Departments an effective, lower cost, life and property saving tool.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 1983 0200002
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

FIRES & FIRE PREVENTION

TECHNICAL TRANSFER ARTICLE - HIGH RISE FIRE SAFETY CONSIDERATIONS

The purpose of this project is to provide an article about and the requirements for design for fire safety in high rise buildings, which will be used for the purposes of continuing education for architects.

CMHC Project Officer : *Sandra Marshall*
Division : Policy and Research Division
AVAILABILITY : Product is not yet on the web

CIDN : 2377 0200008
STATUS : Ongoing
NEW

HEATING AND VENTILATION

ANALYTICAL MODEL OF EARTH TUBE VENTILATION SYSTEMS

The objectives of this project are: to determine the conditions under which exterior ground-buried ducts (earth tubes) can be used effectively under Canadian conditions; to determine heat and moisture gains and losses for these systems under Canadian conditions; to determine the potential contribution to improvement of energy and ventilation performance of Canadian housing; and to develop guidelines for builders regarding the application of these systems.

CMHC Project Officer : *Chris Ives*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200023
STATUS : Ongoing
NEW

ASSESSING THE PARAMETERS FOR VENTILATION SYSTEMS IN MULTI-UNIT RESIDENTIAL BUILDINGS

This research project will determine the ventilation requirements for apartments. Equipment and systems will be evaluated in their ability to meet such requirements in the context of building design, occupancy type and recent experiences in the application of ventilation systems in multi-unit residential buildings. Design and installation recommendations will be created for use by building designers. Technology gaps (e.g.; the absence of appropriate equipment) will also be identified for the benefit of future research and development efforts.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2271 0200001
STATUS : Ongoing

ASSESSMENT AND ALTERNATIVE APPROACHES FOR VENTILATION SYSTEMS IN MULTI-UNIT RESIDENTIAL BUILDINGS

The purpose of this project is to conduct a literature review, needs assessment and alternative approaches for ventilation systems in multi-unit residential buildings.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2271 0200001
STATUS : Ongoing

CAN/CSA F326-M91 (R1998), RESIDENTIAL MECHANICAL VENTILATION SYSTEMS

CMHC has been supporting the revision of Can/CSA F326-M91 (1998), Residential Mechanical Ventilation Systems, with a financial contribution to the Canadian Standards Association (CSA) to act as secretariat and through CMHC participation in the task group work of the Committee. There are some significant changes to be made to the standard. Some of the tasks may require help from outside consultants. The majority of the technical review should be complete by mid-2002.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2062 0200002
STATUS : Ongoing
NEW

CHARACTERIZATION OF AIR LEAKAGE, PRESSURE REGIMES AND RESULTANT AIR MOVEMENT IN HIGH-RISE RESIDENTIAL BUILDINGS

The objective of this project is to undertake a field investigation of the ventilation and infiltration in a residential high-rise building. CMHC, in cooperation with the Institute of Research in Construction, will monitor indoor-outdoor air pressure regimes in a high-rise for a period of one year. Ventilation system performance will also be assessed. Pressure regime measurements, in conjunction with measured air leakage characteristics of selected assemblies, will be used to estimate real-time air movement across the building envelope. This information will add to the body of knowledge governing infiltration-ventilation regimes and resultant heat load calculations in buildings.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1934 0200005
STATUS : Ongoing

DAWSON CITY DEMONSTRATION PROJECT - MONITORING

The objective of this project is to evaluate the state of the mechanical and monitoring system, conduct an on-site inspection in Dawson City and develop a proposal for monitoring and analyzing the system's performance. Two houses were monitored over the past two heating seasons and the operating data is being analyzed.

CMHC Project Officer : *Mark Holzman*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1676 0300005
STATUS : Ongoing

EVALUATION OF AN APARTMENT HEAT RECOVERY VENTILATION SYSTEM

The objective of this project is to assess the ventilation performance of an innovative apartment heat recovery ventilation system.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2271 0200002
STATUS : Ongoing
NEW

FIELD TESTING OF A POSITIVE PRESSURE VENTILATION DEVICE

A Positive Pressure Ventilation device, commonly used by fire departments for smoke control during fire emergencies, will be used to test the pressure and flow generating characteristics of the PPV fan system when used to pressurize a stairwell in a multi-unit residential building. The purposes of the test are twofold. First, the test will confirm the ability of the PPV equipment to generate sufficient pressures within the stairwell of an actual multi-unit residential building to prevent the proliferation of smoke into the stairwell from adjacent corridors. Second, the test will assess the ability of the PPV equipment to generate sufficient pressures to allow the equipment to be used for the purpose of determining air leakage characteristics of large buildings.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1983 0200003
STATUS : Ongoing

FIELD TESTS OF VENTILATION SYSTEMS INSTALLED TO MEET THE 1993 OBC AND 1995 NBC

This research looked at 49 new houses which had ventilation systems installed to meet the requirements of the 1995 National Building Code (as adopted by various provinces) or the 1993 Ontario Building Code. None of the houses met all the code requirements. The lack of compliance in Ontario and the Maritimes was due to equipment selection and installation that varied from code requirements. The Prairie houses also showed very high levels of potential house depressurization, which could lead to dangerous backdrafting and spillage of combustion appliances. Results from the 49 houses were outlined in the CMHC Research Highlight: Technical Series, no. 00-106. Since the field tests, there have been several attempts to propose changes to the National Building Code ventilation requirements, to avoid the problems identified in the survey, and a consensus was achieved in the spring of 2001. More field research has been completed. Ten new Prairie houses were built to the newly drafted code clauses in the fall of 2001 and early winter of 2002. Testing showed that the new clauses were generally being successfully implemented by contractors. There were some areas of noncompliance but they were not safety related.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : N/A
STATUS : Ongoing

NORTHERN HEATING AND VENTILATION SYSTEMS

This is a continuation of related CMHC research which is of particular need to the North. Adequate, appropriate and affordable means of ventilation and verification of manufacturers'claims need to be assessed using established CMHC methodology. Results will be critical in alleviating costly health and building damage due to lack of confirmed ventilation options. The report will be completed in 2002.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2420 0200001
STATUS : Ongoing

HEATING AND VENTILATION

PERFORMANCE ASSESSMENT OF THE LEBRETON FLATS DISTRICT HEATING SYSTEM

The Lebreton Flats district heating system, installed 20 years ago, is one of few examples of low temperature district heating systems in North America. The availability of fuel consumption and maintenance records for the system allowed for an assessment of the performance of the system over the last 20 year period. Preliminary indications reveal that the plant provides space heating and hot water at a cost competitive with individual building systems but without the requisite building space. The distribution system was considered to be in good condition as minimal heat losses were noted. Recommendations regarding system performance, potential upgrades and future operation, maintenance needs and other ownership/management arrangements will be made in the final report.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2134 0200001
STATUS : Ongoing

REDUCTION OF AIR INTAKE CONTAMINATION OF HIGH-RISE RESIDENTIAL BUILDINGS

In the study, entitled, 'Reduction of Air Intake Contamination of High-Rise Residential Buildings', buildings will be tested to determine optimal placement of air intake grilles for HVAC systems. The placement determination will be based on water flume tests and modeling of air movement around high-rise buildings given confounding factors such as the height and proximity of neighboring buildings. A literature survey of relevant research on air intake grille location and contamination potential will also be performed.

CMHC Project Officer : *Duncan Hill*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2305 0200009
STATUS : Ongoing

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

BEST PRACTICE GUIDE - FIRE AND SOUND ASSEMBLIES FOR MULTI-FAMILY BUILDINGS

This document, targeted at designers of multi-family buildings, will provide the latest information on CMHC research into fire and sound partitions, floors, flanking, plumbing noise, etc. Construction details for fire and sound assemblies will be detailed. The document is being produced in collaboration with the NRC/IRC.

CMHC Project Officer : *Ken Ruest*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1804 0200003
STATUS : Ongoing

BEST PRACTICE GUIDE - WOOD FRAME ENVELOPES IN THE COASTAL CLIMATE OF BRITISH COLUMBIA. REVISED EDITION

Building in B.C.'s coastal climate has special challenges -- and this revised guide is the most up-to-date, authoritative information available to help meet those challenges. This guide provides the most comprehensive technical information on how to build to withstand the conditions of B.C.'s coastal climate. The information includes behaviour of wood in construction, moisture source control strategies, heat flow mechanisms, typical envelope assembly characteristics, and materials for inclusion in specifications, quality assurance strategies, maintenance and renewal strategies and more than fifty-three state-of-the-art CAD details showing several air barrier strategies, all included on the companion CD-ROM. Endorsed by the Canadian Wood Council and the Building Envelope Research Consortium.

Ottawa: Canada Mortgage and Housing Corporation, 2001. 258 pages + CD-ROM

Order Number: 60959 **Price: $89.00 + GST and handling charges

NOTE : Aussi disponible en français sous le titre : Guide des règles de l'art : Enveloppe de bâtiments à ossature de bois dans le climat littoral de la Colombie-Britannique

STATUS : New Completed Report
AVAILABILITY : CMHC Information Products

BEST PRACTICE GUIDE FOR CURTAIN WALLS

The objective of this project is to develop a practical, advisory document for designers, architects and engineers, and manufacturers, related to curtain wall systems in housing applications. The curtain-wall is a well developed system in commercial applications but it requires special treatment when used in housing. The project will be conducted in partnership with curtain wall manufacturers and installers and their associations. This Guide will be produced as a joint publication through a collaborative project with Public Works Government Services Canada. The Guide, produced in hard copy and CD-ROM format, will address: pertinent building science with emphasis given to aspects particular to curtain walls, construction details in AutoCAD format, outline specifications and additional sources of information and references. The anticipated release date for the product is October 2002.

CMHC Project Officer : *Luis de Miguel*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2216 0200001
STATUS : Ongoing

BEST PRACTICE GUIDE FOR EXTERIOR INSULATED FINISHED SYSTEMS (EIFS)

The objective of this project is to develop a practical, advisory document for designers, architects and engineers, and manufacturers, related to EIFS in residential applications. The project will be conducted in partnership with EIFS manufacturers and installers and their associations. This Guide will be produced as a joint publication through a collaborative project with the EIFS Council of Canada and the BC Wall and Ceiling Association. The Guide, produced in hard copy and CD-ROM format, will address: pertinent building science with emphasis given to aspects particular to EIFS, construction details in AutoCAD format, outline specifications and additional sources of information and references. Anticipated release date is October 2002.

CMHC Project Officer : *Luis de Miguel*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2047 0200001
STATUS : Ongoing

BETTER BUILDING GUIDE TO INNOVATION IN THE DESIGN AND CONSTRUCTION OF HIGH-RISE RESIDENTIAL BUILDINGS

The objective of this project was to coordinate and edit the work relating to updating the "Better Building Guide to Innovation in the Design and Construction of High-Rise Residential Buildings" and to update the text, references and illustrations. The revised guide, titled Healthy High-rise Guide to Innovation is designed for architects and other building design professionals.

STATUS : Completed
AVAILABILITY : Product is available on the web

BRITISH COLUMBIA HIGH-RISE ENVELOPE DETAILS STUDY

In recent years, there have been significant efforts to understand and resolve moisture ingress and deterioration problems associated with wood-framed, low-rise building construction. Currently, this problem is acute in some wood-frame condominiums in the Lower Mainland of British Columbia. There are indications that the high-rise stock may also be experiencing similar moisture problems. The objective of this project was to examine the files of a sample of thirty-five buildings to identify causal relationships that have resulted in building envelope problems and successes in non-combustible high-rise residential buildings in the coastal climate of lower mainland BC. This was done by correlating building envelope performance with sources of moisture, and features of design and construction of assemblies and details. The project did not estimate the extent of a potential problem. The project focused specifically on envelope details and envelope systems that have failed, rather than building failures. Envelope types and components under review included window/wall assemblies and light-gauge steel stud (back-up) wall assemblies with stucco, masonry and EIFS cladding systems. Project funding has been provided by Canada Mortgage and Housing Corporation in partnership with the Homeowner Protection Office, the City of Vancouver, the EIFS Council of Canada and Vancouver Condominium Services Ltd.

CMHC Project Officer : *Mark Salerno, Silvio Plescia* ***CIDN*** : 2234 0200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

BUILDING RATING AND LABELING SYSTEMS

This project's objectives are to assess the changes that would have to be made to the 'LEED' rating system (owned by the US Green Building Council), to suit it to Canadian conditions; and to evaluate whether the existing Canadian 'Green Leaf' system (owned by ECD Canada), can readily be harmonized with LEED and whether it is likely to be able to function as a low-cost and simple complementary system.

CMHC Project Officer : *Sandra Marshall* ***CIDN*** : 2474 0200017
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

CHARACTERIZATION OF THE STOCK OF CONDOMINIUM BUILDINGS IN CANADA

The number and characteristics of condominiums in Canada are unknown. This project will review Statistics Canada data files to estimate the number of condominiums in Canada, their location, age, number of storeys and number of suites. This information will be used to supplement the CMHC Rental Market Survey in order to estimate the overall population of multi-unit residential buildings in Canada. This information will also be used to determine the data requirements for a database of multi-unit buildings that describes the physical characteristics and energy consumption patterns of this class of buildings. Such a database is necessary to establish energy retrofit guidelines for multi-unit residential buildings.

The review by STATSCAN has found that the number of condominium buildings in Canada may be determined through building permit information available from STATSCAN files since 1970. STATSCAN is in the process of compiling this information to estimate the condominium building population.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2277 0200001
STATUS : Ongoing

CONDITION SURVEY OF CONDOMINIUMS IN THE GREATER TORONTO AREA (GTA)

This project's objective is to carry out a condition survey of condominiums in the Greater Toronto Area. This project will be carried out in two phases. Phase 1 focuses primarily on data collection and development of research methodologies for examining topics related to both physical and social issues. Phase 2 focuses on conducting the surveys and completing the analysis of the state of repair of the buildings.

CMHC Project Officer : *Sandra Marshall*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2161 0200002
STATUS : Ongoing

CONVERSION OF HIGH-RISE BUILDINGS TO RESIDENTIAL USE

The project will survey design and construction professionals and property managers of existing converted buildings across Canada to determine the extent and nature of technical problems which were encountered in the design and construction phases of the conversions; to determine the perception of property managers as to the concerns of the occupants; to determine the technical problems which have arisen as a result of these conversions; and to determine if there were any attempts to improve energy use performance or to introduce features to improve the sustainability of these buildings. Selected buildings would be documented as case studies in CMHC's Better Buildings/Innovative Buildings information series. The research report on this study is completed.

CMHC Project Officer : *Sandra Marshall*
Division : Policy and Research Division
AVAILABILITY : Product is not yet on the web

CIDN : 2242 0200001
STATUS : Ongoing

DEVELOPMENT OF A CEMENT STRESS-SKIN EPS-CORE BUILDING SYSTEM

This project's objective is to verify the performance of a composite wall in order to determine if it is safe for use in ancillary and residential buildings.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2437 0200011
STATUS : Ongoing

DEVELOPMENT OF THE HIGH-RISE STATISTICALLY REPRESENTATIVE HOUSING DATABASE (HISTAR)

A database structure to house building characteristics, energy and water usage data for multi-unit residential buildings has been completed. The database, known as HiSTAR (High rise building Statistically Representative Database) is in MS ACCESS format. The database will be used to compile and analyze building energy and water data collected during CMHC's research projects which take consultants into high-rise residential buildings. The HiSTAR database will be used to generate fact sheets on energy and water use and will be used for the analysis of the potential impact of energy and water efficiency upgrades.

STATUS : Completed
AVAILABILITY : There will be no product for this project

DEVELOPMENT OF THE HIGH-RISE STATISTICALLY REPRESENTATIVE HOUSING DATABASE (HISTAR) TASK 2: COLLECTION OF ADDITIONAL BUILDING FILES FOR THE HISTAR DATABASE

CMHC has commissioned a research project to gather information to characterize the energy and water consumption patterns in multi-unit residential buildings. This data will be used to supplement the data contained in the CMHC HiSTAR database. The HiSTAR database is used to baseline water and energy use in multi-unit residential buildings and is also used to evaluate the impact of building and occupancy characteristics and location on energy and water use.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2366 0200002
STATUS : Ongoing

FIRE AND ACOUSTICAL PERFORMANCE OF FLOOR ASSEMBLIES - PHASE II

A continuation of an earlier project, this phase will be carried out over 4 years with a total budget of $2.2 million. A dozen industry and government partners have formed a consortium with the National Research Council of Canada to complete testing of several types of assemblies for residential construction. Results will be incorporated in the National Building Code of Canada. Both full and small scale fire and sound testing will be carried out. A large database will be developed which designers and builders can use for reference. Particular attention will be given to assemblies likely to just obtain an STC 50 rating.

CMHC Project Officer : *Luis de Miguel*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2375 0200001
STATUS : Ongoing

GUIDELINES FOR THE RETROFIT OF UNINSULATED MASONRY WALLS

Investigations of previously retrofitted solid masonry walls have been performed to determine the impact that the interior application of insulation has on the durability of the walls. The findings of the investigations will be published as case studies. Case studies will include a 120 year old solid masonry building in Montreal that was insulated 15 years ago by the application of spray applied polyurethane insulation on the interior of the walls, a 50 year old solid masonry office building in Ottawa that was insulated on the interior 8 years ago and several 1900's vintage apartment buildings in the Ottawa area. Preliminary indications are that the interior application of insulation has not adversely affected the durability of the masonry walls of the case study buildings but further investigation will be required to confirm that this conclusion generally holds true for other buildings.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : N/A
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IN-SITU MONITORING OF WOOD-FRAMED EXTERIOR WALL ASSEMBLIES - COQUITLAM, BC

Wood framed buildings in the Vancouver area have experienced excessive moisture damage to the sheathing boards and wood framing over the past decade. This applied research project, funded by Canada Mortgage and Housing Corporation in partnership with Polygon Homes Ltd., involves the development of a building envelope diagnostic tool, specifically, an in-situ monitoring method to diagnose causes of moisture problems in low-rise wood-framed construction. This method is important to residential building owners as it can be used to develop cost effective remedial repair recommendations and to promote better design and construction guidelines for new buildings. This project's objective is to monitor the performance of the exterior wall assemblies of two, 46 unit four-storey buildings in Coquitlam, BC. Monitoring will be carried out for one full year, capturing the wall response to the range of climate loading conditions. Exterior walls, including interior living spaces as well as interstitial wall areas, will be monitored for temperature, relative humidity, wood moisture content and air pressure differentials. A weather station, mounted on the roof of one building will capture the local weather conditions: air temperature and relative humidity, wind speed and direction and rainfall. Monitoring of the buildings began in January 2001. Data collection will continue until the spring 2002. Project completion is expected during the summer of 2002.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 2254 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

INTEGRATED DESIGN CHARRETTE IN TORONTO FOR ARCHITECTS AND BUILDING PROFESSIONALS

This project's objective is to undertake and complete the organizational and reporting work to plan, coordinate and carry out activities related to an Integrated Design Charrette in Toronto for architects and building professionals.

CMHC Project Officer : *Sandra Marshall* ***CIDN*** : 2474 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Research highlight is not yet available ***NEW***

LOAD PROFILES IN MULTI-UNIT RESIDENTIAL BUILDINGS: PILOT STUDY ON LOAD PROFILING IN METRO TORONTO HOUSING

This project will describe load profiling work underway in Metro Toronto Housing Corporation multi-unit residential buildings. The project will characterize thermal, electrical power and water requirements in the apartment buildings and will also identify technical issues encountered in load monitoring and data interpretation. This project is being used as a pilot project to identify the factors that will have to be considered in a larger project being planned by CMHC and Natural Resources Canada to assess the energy and water load profiles in low and high-rise housing.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2201 0200001
STATUS : Ongoing

MODELING OF AIR/MOISTURE MOVEMENT AND DURABILITY PERFORMANCE OF RESIDENTIAL AND COMMERCIAL BUILDINGS

The purpose of this project is to develop knowledge to assess the impact of various wall design and indoor-outdoor environmental conditions on the durability and energy efficiency of new and retrofitted high-rise residential and commercial building systems. The hygIRC heat, air and moisture model developed by the Institute for Research in Construction is being used to model common wall systems. Retrofits to improve the airtightness and insulation levels in the walls were developed and are being applied to the basic wall systems. The hygIRC model will simulate heat, air and moisture conditions within the retrofitted walls to determine how the retrofits affect the durability of the wall system. This information will be used as a means to confirm the integrity of several specific retrofit measures developed for high-rise wall structures before they are recommended to the building industry.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1934 0200003
STATUS : Ongoing

MODIFY AND UPGRADE WALLDRY COMPUTER PROGRAM

This project's objective is to modify and upgrade WALLDRY, a computer program developed by CMHC, which models the flows of moisture, heat and air through wall assemblies.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2505 0200001
STATUS : Ongoing
NEW

MONITORING INNOVATIVE MECHANICAL AND ELECTRICAL SYSTEMS

The innovative mechanical and electrical energy producing systems in a multi-unit residential buildings project in Toronto were monitored and assessed to determine their economic viability. The project involved the assessment of the buildings cogeneration, space heating, absorption chilling, domestic hot water and ventilation systems and a review of natural gas and electricity use. The cost of energy provided to the building by the cogeneration system in terms of fuel consumption, maintenance expenditures, avoided electrical use and other considerations was determined. An inspection of the individual space conditioning systems within the suites was also performed. The findings of the investigation showed that the operation costs (fuel use, maintenance and repair) of the cogeneration system was not economically viable. Key findings include the observation that the system was not making full use of the heat generated by the cogeneration systems. The report estimated that even if all of the heat was recovered from the cogeneration system, the benefit of the system to the building's owners would be marginal. Given that the building embodies some of the most advanced technologies that allow for energy efficiency, cascading and recovery, operation costs should have been low relative to conventional buildings.

CMHC coordinated a meeting of the project developer, engineering design team, cogeneration system manufacturer, utility representative and industry experts and stakeholders to review the situation in the building and to determine whether or not the performance of the building systems could be improved. The outcome of the meeting was that a review of the utility meters and billing history should be undertaken to confirm that the basic information being used to assess the performance of the building is correct. CMHC is working with Ontario Hydro Energy and Admic Controls to develop a metering review plan and evaluation.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1260 0800001
STATUS : Ongoing

PERFORMANCE OF AN INNOVATIVE HIGH-RISE RESIDENTIAL BUILDING

CMHC is monitoring the performance of a recently constructed multi-unit residential building that implemented many of the most innovative building technologies developed to date. The building features a durable, airtight and highly insulated building envelope, combination space and domestic hot water heating systems in each apartment, individual heat recovery ventilators in each apartment, thermally isolated balcony slabs, a heat recovery system for corridor ventilation and garbage room odour containment. The monitoring project will assess the performance of the building envelope, the space and domestic hot water heating systems and the efficiency and effectiveness of the ventilation systems. Air movement throughout the building will also be assessed. To date, the building has been air tested to assess its air leakage characteristics. The tests showed that the building is one of the most airtight multi-unit residential buildings constructed in Canada. Energy and water monitoring has shown that the building consumes approximately one half of the average energy and water used in conventional apartment buildings.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2147 0200001
STATUS : Ongoing
NEW

REPAIR AND RETROFIT CASE STUDIES OF THE LOFTS CORTICELLI COMPLEX

A field project to review the condition of the solid masonry walls of a historic building in Montréal has been completed. The building, originally constructed in the 1800's, was converted to residential use in 1986. As a part of the renovation, the interior of the solid masonry brick walls was insulated with spray applied polyurethane foam and fibreglass batt insulation. As this type of insulation retrofit was thought to be responsible for the deterioration of solid masonry walls, CMHC initiated a project to assess the condition of the building envelope and all of the elements. The field survey found that the walls, after 14-15 years of service, were in good condition. No conditions or symptoms were found that would lead to the conclusion that the application of the spray applied polyurethane foam and other finishing materials had, in anyway, undermined the integrity of the wall system. This finding is important as many older buildings in the urban areas of Canada are being renovated to residential use and exterior insulation retrofits are not possible for heritage or aesthetic reasons. While the finding of this study is specific to this one building, it appears that interior insulation wall retrofits may be possible as long as steps are taken to prevent the intrusion of moisture and air leakage from both interior and exterior sources into the wall assembly. Susceptible wall members, such as embedded wood structural members should be protected as well. CMHC will perform additional case studies of retrofitted solid masonry walls to provide a better understanding of the strengths and weaknesses of this form of renovation.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 1782 0300020
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

REVISIONS TO BRICK VENEER STEEL STUD BEST PRACTICE GUIDE

The objective of this project is to produce a revised version of CMHC's Brick Veneer Steel Stud Best Practice Guide.

CMHC Project Officer : *Luis de Miguel* ***CIDN*** : 2378 0200003
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

SEISMIC PERFORMANCE OF RAINSCREEN STUCCO

As an integral phase of a larger 'Earthquake 99 Project' (a project to develop practical cost-effective methods to substantially reduce heavy earthquake damage to residential wood frame construction) Canada Mortgage and Housing Corporation in partnership with the Homeowner Protection Office and British Columbia Housing Management Commission contracted with the University of British Columbia and TBG Seismic Consultants to research the seismic performance of rainscreen stucco exterior cladding systems for residential wood frame construction in BC. The primary objective of this research is a comparative earthquake performance evaluation of rainscreen and non-rainscreen stucco systems. The secondary research objective is the development of refinements to the design of rainscreen stucco systems to improve performance when subjected to seismic loading. This comprehensive study includes an extensive test series to determine the strength of different stucco types, static cyclic tests of single wall specimens, the analytical modeling of wall systems with stucco, and the dynamic testing of a full-scale house incorporating a stucco wall system The completion of this project is expected by end of summer 2002.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 2480 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

TECHNOLOGY ROAD MAP FOR INTELLIGENT BUILDING TECHNOLOGIES

The objective of this project is to develop a road map for intelligent building technologies, considering the potential technological, societal and other developments that will affect the industry within the next five years.

CMHC Project Officer : *Sandra Marshall*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2388 0200001
STATUS : Ongoing

HOME OWNERSHIP

CONDOMINIUM BUYER'S GUIDE

This guide is being developed to assist buyers in choosing a condominium which meets their personal and financial needs. The guide will provide buyers with an overview of the operation of different condominiums and important questions to address when choosing a condominium to meet the lifestyle and financial needs of the buyer. In addition, the guide will provide guidelines on evaluating the financial and physical status of an existing condominium. Information on evaluating the physical condition of the individual unit, the condominium building and grounds, and the financial status of the condominium will also be covered. Contact information for acquiring additional information and assistance will be included.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2514 0200001
STATUS : Ongoing
NEW

HOUSE CONSTRUCTION

ALTERNATIVE WALL SYSTEMS FOR LOW-RISE RESIDENTIAL CONSTRUCTION

The purpose of this study was to research ten alternative wall systems for low-rise housing in use today. These systems included insulated concrete forms, straw bale, structural insulated panels, stack wall, concrete block, post and beam, log, earth construction, manufactured wood, and lightweight steel. The results of this study will be beneficial to those in the industry to help them make better informed decisions on choices between alternative systems. This study investigated the differences, benefits and limitations of the various building systems which are currently in use as compared to the typical wood-frame, stick-built construction of low-rise housing. It considered the benefits and drawbacks of the various systems. The study examined a number of the factors to be considered by a builder or homeowner to help them understand the differences between the available system choices so they may evaluate and select systems appropriate to their clients, house designs, trade practices and skills, and regions. The study included reviews by industry representatives. The final report should be available by July 2002.

CMHC Project Officer : *Darrel Smith*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2119 0200
STATUS : Ongoing

BUILDING ENVELOPE SOLUTIONS - THEORY AND PRACTICE

This was a partnership project between the Canadian Home Builder's Association of British Columbia (CHBA/BC), the Homeowner Protection Office (HPO) of B.C. and CMHC. The purpose of the project, previously called "Builders ToolBox", was to develop materials which would be used to train general contractors and subtrades in building construction practices that would enable them to construct highly durable building envelopes for new residential wood-frame buildings located in the lower mainland of British Columbia and Vancouver Island and to restore and upgrade the envelopes of existing buildings. The end product is a manual divided into 11 modules: Introduction; Building Science; Results of Survey of Buildings in the Lower Mainland; Condensation Control in Wall Assemblies; Rain Penetration Control in Wall Assemblies; Sheathing, Sheathing Membranes, Claddings and Flashings; Windows and Doors; Roofs, Decks, Walkways and Balconies; New Construction of the Building Envelope; Restoration of the Building Envelope; and Regulatory Requirements and Standards. The material can be tailored to meet the various needs of the residential construction industry in B.C. The course is currently being offered by the British Columbia Institute of Technology.

STATUS : Completed
AVAILABILITY : Seminar/training is available

COMPARING THE PERFORMANCE OF TWO-COAT VS THREE-COAT STUCCO

CMHC through its Prairie and Northwest Territories Business Service Centre in Calgary is supporting this Alberta Housing Industry Technical Committee (AHITC) research project.. The research will use laboratory and field testing to compare the performance of two coat stucco commonly used in the Prairies and standard three coat stucco. If they perform similarly, building code changes may be recommended. The effects of stucco additives and mixtures will also be examined. The contractor has completed the review of test procedures and has undertaken the laboratory work. Two coat stucco did not have the same strength in laboratory testing as code-required three coat. Field tests are being organized to see if two coat stucco applied to actual houses is performing as well as three coat.

CMHC Project Officer : *Don Fugler, Colin Crumb* ***CIDN*** : 2399 0200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF AN INSTRUCTOR'S GUIDE AND AN ACCOMPANYING PRESENTATION FOR RESIDENTIAL GUIDE TO EARTHQUAKE RESISTANCE

The objective of this project was to develop a course to advocate the importance of, and to convey knowledge on making houses more resistant to earthquakes. There will be two courses developed. The first one, which was developed in partnership with the British Columbia Institute of Technology (BCIT), is approximately 18-24 hours in length and will be targeted to designers, builders and renovators. It covers information on construction techniques to better prepare housing to withstand an earthquake. The second course, which will be developed in-house by CMHC staff from the long course, will be approximately 6 hours and targeted to a general audience of consumers. It will address consumers' concerns regarding the durability of their housing during disasters. The development of the industry course is completed and is to be piloted through BCIT this Fall and Winter, 2002. Following the pilot any required modifications will be made to the course material.

CMHC Project Officer : *Darrel Smith, Mark Salerno* ***CIDN*** : 2517 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Seminar/training is available

FEASIBILITY OF DEVELOPING A BUILDING CANADA PROGRAM

The purpose of this project by EnerQuality Corporation is to examine the feasibility of developing a Building Canada program similar to the Building America model. To be effective, the Canadian program needs to be of interest to Canadian builders and recognize the different environment by responding to their real needs, i.e., reducing construction costs, customer callbacks, warranty claims, construction time, and construction waste, while at the same time improving the energy efficiency of their new houses. The program will result in little or no additional cost for the builder and where ever possible a reduction in costs. This study is a necessary first step to determine if a Building Canada program is viable and could be established in Canada. It will draw from the experience of the Building America program as well as the results achieved in a pilot of this program with two large Canadian builders. This project is being managed by EnerQuality Corporation on behalf of a consortium of partners including: CMHC, Enbridge Consumers Gas, Union Gas, Owens Corning, Natural Resources Canada, and the National Research Council (through its Industrial Research Assistance Program). Once this initial program design phase has been completed, and if found feasible, the program will be launched and expanded as part of subsequent phases.

CMHC Project Officer : *Darrel Smith*

CIDN : 2387 0200002

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

FEASIBILITY STUDY ON THE DEVELOPMENT OF A COMMISSIONING GUIDE FOR NEW HOUSES

The purpose of this project was to assess the importance and determine the feasibility of developing a commissioning guide for builders and buyers of new houses. The research indicated that generally home builders do not currently carry out a whole house commissioning and do not have a protocol to do so. However with houses becoming more complex, there is greater need to have a competent person investigate the whole house and all its systems to ensure they are installed and functioning as originally designed before delivery to the buyer. To be effective and useful, the commissioning guide must be simple to use and yet comprehensive. It must not add significantly to the cost of the house. Commissioning should not be a duplication of services already in place. The guide should include a review of the installation and operation of all major components and systems of the house. The study found that the benefits of the house commissioning process are that:

- houses perform better;
- homeowners are assured the house is built as expected according to the plans and specifications and the components and systems have been installed and are functioning properly;
- homeowners are better informed about the systems in their houses and how they work (resulting in less call backs for contractors); and
- potential problems are identified before damage occurs (also resulting in less call backs for contractors and reduced costs for warranty programs).

The study identified a need and found interest by clients and stakeholders in the development of a commissioning guide. As a result, CMHC is considering the development of a commissioning guide.

Prepared by Buchan, Lawton, Parent Ltd. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Darrel Smith. Ottawa: Buchan, Lawton, Parent Ltd., 2001. ca. 100 pages

STATUS : New Completed Report

AVAILABILITY : Available on an interlibrary loan basis from:
Canadian Housing Information Centre

HOUSE CONSTRUCTION

RESEARCH ON SOLUTIONS TO PYRITE-RELATED BACKFILL EXPANSION PROBLEMS

This study will draw up an inventory of the problems associated with the reactions of the pyrite (iron sulphide) contained in the backfill stone used under slabs in residential properties. Two hundred houses inventoried in three Montréal South-Shore municipalities will be visited under the CTQ-M200 protocol developed as part of the work of the Quebec technical committee on pyrite-related problems. The results of the study will identify possible causes and potential affordable solutions. The objective is to provide the industry with a more global vision of this new situation.

CMHC Project Officer : *Jacqueline Meunier-Bureau* ***CIDN*** : N/A
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

WOOD USAGE IN STRAW BALE HOUSE CONSTRUCTION

This is another in a series of small projects assessing the acceptability of straw bale walls for housing. The contractor totaled the wood used during the construction of his load-bearing, straw bale building, and then compared it to a simulated, conventional building of the same size and design. In this simple design, without interior partitions, the straw building used over 45% less wood than the corresponding conventional house. This study uses the straw bale building type that is most likely to show an advantage. For straw bale houses using post and beam construction, or having significant interior framing, wood savings would be much reduced.

Research Contractor: Scott Pegg, Eco-Way Living Group Inc. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2002. (Research Highlights; Technical Series; 02-116) 2 pages

NOTE : Aussi disponible en français sous le titre : L'utilisation de bois dans la construction de maisons en ballots de paille

STATUS : Completed **AVAILABILITY :** Research highlight is available

HOUSING DESIGN

DESIGN MULTIPLE-UNIT CHUM'S AND MODULAR HOUSE PACKAGES FOR URBAN AND SUBURBAN, REMOTE AND NORTHERN COMMUNITIES

The purpose of this project is to support the preparation of design drawings, construction specifications and cost estimates for several Multi-Unit CHUM's (Containerized Heat and Utilities Modules), and for matching Modular House Designs that would integrate with these CHUM's, specifically for the suburban and rural, remote and northern communities contemplated. A CHUM provides on-site utility services for housing. The project is about 85% complete - a draft version of a design manual has been produced in both a printed format and as a CD-ROM. The project has been delayed in part due to difficulties in establishing candidate sites for demonstration and/or commercial application. The manufactured housing industry has been a key participant/supporter of this project.

CMHC Project Officer : *Chris Ives* ***CIDN*** : 2407 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

FLEXHOUSING FEATURES IN A BENCHMARK HOUSE DESIGN

This project's objective is to produce costing information which will show the cost of including FlexHousing features in a benchmark house design.

CMHC Project Officer : *Thomas Parker*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2512 0200001
STATUS : Ongoing
NEW

MONTRÉAL: A GREAT TRADITION OF MEDIUM-DENSITY HOUSING

This project aims to highlight the adaptation processes of housing and building types throughout the various phases of the evolution of "plex" formulas (duplex, triplex, fourplex, fiveplex ...) in Montreal over two construction cycles between 1866 and 1900.

CMHC Project Officer : *Brian Eames*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 1455 0200001
STATUS : Ongoing

QUANTIFYING UNIVERSAL DESIGN: A PROGRAM FOR IMPLEMENTATION

This research project was to identify methods to acquire the pragmatic information needed to further the principles of universal design. These principles of flexibility, ease of use, etc. were validated with some modifications. As in previous research, the concepts inherent in universal design were seen as critical, appropriate and useful to create more inclusive environments.

The methodology for this project featured a literature search, the preparation of a discussion paper, and a meeting with people with diverse expertise discussing questions related to develop methods for collecting and organizing information to promote universal design.

The literature review found that most current dimensional information fails to meet criteria developed from a universal design perspective. In particular, people with disabilities, people 65 years and older, children, and pregnant women were under-represented in the samples and in the types of dimensional information available. As well, the information that was available was usually presented as separate from the 'general population' rather than integrated into inclusive databases.

The final report includes a summary of the meeting discussions with a description of a proposed methodology, discussion of resources needed to implement such research projects, and the organization of a database. The appendices include a glossary, the background discussion paper with a literature review synthesis, and the list of consultants.

A report of a workshop, October 13-14, 2001, Winnipeg, Manitoba. Researched and prepared by F. G. Consortium, Gail Finkel & Yhetta Gold in collaboration with Betty Havens, Juliette Cooper. Ottawa: Canada Mortgage and Housing Corporation, 2001. (External Research Program Research Report) 54 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

BONHEUR DU BON AIR - ALONG WITH THE DRAFTING OF AN ACCOMPANYING BOOKLET

This project's objective is the production of a CD entitled "Le bonheur du bon air", along with the drafting of an accompanying booklet.

CMHC Project Officer : *Jean Rattelle* ***CIDN*** : 2463 0200002
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

DEPRESSURIZATION RESISTANCE TESTING

There are several projects under this title. One project is supporting the development of testing procedures to be used in wood burning appliance standards to determine the depressurization resistance of various appliances. If useful, the technique or a variation of it may be integrated into appliance standards for other fuels (e.g. gas, oil). Another project is surveying 100 appliances in Peterborough and Winnipeg to see if theoretically "spillage-resistant" appliances can operate under significant house depressurization. A third project will support development of the test procedures.

CMHC Project Officer : *Don Fugler* ***CIDN*** : 2492 0200002
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPING MATERIAL EMISSIONS STANDARDS FOR ASTM APPROVAL

This project is providing support for the development of two ASTM standards on materials emissions. One of these standards will be for evaluating emission factors from "Caulk and Sealant Products," and the other will be for "Spray-Applied Polyurethane Cellular Plastic Thermal Insulation." The standards are nearing the completion stage. With changes resulting from a Spring 2001 ballot, the standards will be resubmitted for balloting in late Spring 2002.

CMHC Project Officer : *Ken Ruest* ***CIDN*** : 1244 0201011
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

HEALTHY INDOOR ENVIRONMENTS PHASE 2: CONSULTATION PROCESS

This is the second phase of the project "Towards the Use of Voluntary Initiatives for Achieving Healthy Indoor Environments in Canada" which was a 1998-99 partnership project led by Pollution Probe Foundation in which CMHC participated. Recommendations from the initial report include the development of a comprehensive multi-stakeholder strategy to address the Canadian indoor environment issue. Phase 2 work, also led by Pollution Probe in partnership with a number of government and industry stakeholders, involved the hosting of three regional consultations (Toronto, November 2000; Halifax, January 2001; and Vancouver, March 2001) and a web based database discussion forum. Phase 2 developed a vision of what is possible in the field of healthy indoor environments, a strategy to achieve it, and began establishing multi-stakeholder commitment to realize that strategy. The project has been completed and the final report "Healthy Indoors: Achieving Healthy Indoor Environments in Canada" is available by loan from CMHC's Canadian Housing Information Centre (CHIC) and copies are being distributed by the Pollution Probe Foundation.

STATUS : Completed **AVAILABILITY :** Final report is published and distributed by Pollution Probe Foundation.

INDOOR AIR POLLUTION FROM ATTACHED GARAGES

CMHC contributed to a Health Canada/Environment Canada project investigating the infiltration of garage-based pollutants into houses. Twenty-five Ottawa houses have been tested to determine the leakage area between the house and the attached garage. Pressure differentials were recorded and pressure testing was repeated during the winter months. Further field testing took place in the winter of 1998/99, including modeling of the IAQ implications and monitoring of pollutant entry when the garage is occupied by a "calibrated" car. Modelling of results showed that one proposed solution, garage exhaust fans, could be effective in some houses but near useless in others. The research is being published in various peer-reviewed publications during 2002. CMHC released a Research Highlight (Technical Series 01-122) on the airtightness testing aspect of the project in summer 2001. Additional testing is planned to start in 2002.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1910 0200002
STATUS : Ongoing

LET'S CLEAR THE AIR INDOOR AIR QUALITY (IAQ) INITIATIVE

This initiative delivers information on indoor air quality in the home to targeted audiences, the end result of which will benefit Canadian homeowners and occupants. Basic information to increase awareness and appreciation of indoor air problems is through the one-day Let's Clear the Air seminar for housing and health professionals. A second day consisting of a site visit to a home with an IAQ expert demonstrates the IAQ investigation method. Qualified individuals can proceed to the Residential Indoor Air Quality Investigator Training Program. Individuals who complete the training program acquire the skills to inspect homes for IAQ problems and to provide informed advice to homeowners on how to correct these problems. As a private business, they offer their professional services to the public for a fee. Individuals interested in the program can contact the training coordinator (e-mail: IAQprogram@aol.com, telephone 613 253-8372) for admission requirements and application forms. Two dozen individuals have received their completion diploma and fifty are in the field training phase. For referral purposes, a list of diploma graduates is available from CMHC offices.

CMHC Project Officer : *Virginia Salares*
Division : Policy and Research Division
AVAILABILITY : Seminar/training is available

CIDN : 1623 0300017
STATUS : Ongoing

POUSSIÈRE DOMESTIQUE : UN OUTIL EFFICACE ET ABORDABLE D'ÉVALUATION DE SALUBRITÉ MICROBIENNE RÉSIDENTIELLE : RAPPORT FINAL

In the Greater Montréal area, in 2000 and 2001, the microbial content of the dust of 68 "healthy" homes with no water damage and no occupant health symptoms was compared to that of 145 "unhealthy" homes with major water damage. The average mould counts are seven times higher than in the unhealthy homes. The distribution of mould in healthy homes, with a predominance of genera like Cladosporium and Alternaria, differs from that in unhealthy homes, with genera such as Penicillium and Aspergillus. These results show that the mould content of the dust in a home is an indicator of its degree of microbial health.

Prepared by Marie-France Pinard, Laboratoire MICROVITAL. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Ken Ruest. Ottawa: CMHC, 2002. (External Research Program) ca. 29 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

PRINCE EDWARD ISLAND BIRTH COHORT STUDY OF MOLD IN HOMES

This joint study between CMHC, Carleton University, Health Canada and others is examining a large sample of homes in Prince Edward Island to determine the biological exposure, house performance parameters and energy use characteristics of a statistically-representative set of houses occupied by newborn babies. Part of the study will follow the health of these babies to determine the degree to which damp and moldy houses result in increased infant health problems. A total of 291 houses have been tested at the end of the fifth year of the project. An additional 60 houses are to be tested during winter 2002-2003. Due to the long term nature of this research, research reports have not as yet been issued.

CMHC Project Officer : *Ken Ruest*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1618 0300001- 2
STATUS : Ongoing

RENOVATING THE HOME FOR ASTHMA: AN INTERVENTION STUDY

The purpose of this project is to study the relationship between air quality in housing and respiratory health. Health Canada, Carleton University and Natural Resources Canada are partners and are represented in the project advisory committee. Funding is from CMHC, with contribution from the Program for Energy Research and Development (PERD). The methodology is similar to that of a completed pilot project which studied the effect of renovating the homes for indoor air quality on the asthmatic condition of the occupants. This project will look at 20 case studies of moldy houses selected from different parts of the country and renovated by their owners. Remediation of the houses will incorporate measures to improve their energy efficiency. The output will be a research report that will be of interest to builders and renovators, the general public, the asthmatic population, researchers and physicians. The study should be complete by late 2003.

CMHC Project Officer : *Virginia Salares*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2157 0200001
STATUS : Ongoing

RESEARCH CHAIR IN HEALTH AND INDOOR AIR QUALITY - CARLETON UNIVERSITY

CMHC is participating in an Industrial Research Chair in Health and Indoor Air Quality at Carleton University. The principal funding for this Chair is being provided by the Natural Sciences and Engineering Research Council (NSERC), Paracel Laboratories, Morrison Hershfield Ltd., Health Canada, Kingston General Hospital, Carleton University and CMHC. The Chair, in collaboration with its partners, will develop more rapid and cost effective methods for measuring the types and amount of mold in buildings and exposures of the occupants, construct a database of cultures of molds found in moisture troubled buildings, prepare purified extracts of the molds for allergy diagnostic tests and undertake studies of the effects of these molds on lung cells. The output from this Chair would have far-reaching benefits for the general population in the clinical diagnosis of mold allergy and the mitigation of mold contaminated buildings. A five year research program of the Chair is underway.

CMHC Project Officer : *Virginia Salares*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2269 0600
STATUS : Ongoing

FEASIBILITY OF UTILIZING A PORTABLE HOUSING PLANT FOR SINGLE FAMILY DETACHED CONSTRUCTION

This External Research project is studying the economic feasibility of using an automated, highly mobile plant to produce houses that are from 90-95% complete when they leave the plant. The plant would be erected in the subdivision where the houses are to be built, and once the construction program is complete, the plant would be dismantled and shipped to the next locale. An interim report has been received (Fall 2001), and the final report is expected in the second quarter of 2002.

CMHC Project Officer : *Chris Ives*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2305 0200004
STATUS : Ongoing
NEW

MANUFACTURED HOME DESIGN AND LAND LEASE COMMUNITY PLANNING

The purpose of this project is to explore various innovations in land use, infrastructure and unit design in manufactured home land lease communities across Canada. The intention is to demonstrate that not only can land lease communities be leaders in infrastructure innovation as well as providers of high quality affordable housing, but that in any community when these issues are explored simultaneously, that savings from one area can offset extra costs in another. The first of several demonstrations which will make up this project will undertake and complete the design of a Tee or L shaped 'foldable' manufactured home with improved heat storage and thermal envelope and its related site planning, as well as initial planning and infrastructure investigations for future phases of a land lease community in Nova Scotia. Other projects will investigate two storey designs and the use of containerized infrastructure modules.

CMHC Project Officer : *Doug Pollard*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2444 0200001
STATUS : Ongoing
NEW

MANUFACTURED HOUSING CONSULTANTS' TRAINING PROGRAM - PHASE II

This was a partnership project between the Canadian Manufactured Housing Institute (CMHI), the Provincial Manufactured Housing Associations of B.C., Alberta and Saskatchewan, Ontario and Atlantic Canada, and CMHC. The purpose of this project was to build on and improve the two day Manufactured Housing Consultants' Training Program and to ready it for ongoing delivery at the provincial level. The training program, which was developed under Phase I, covers a broad overview of the many aspects of the manufactured housing sales function. Topics include product and process knowledge, such as factory construction, zoning regulations, siting options, and transportation and installation procedures. Under Phase II, the participant's manual and the trainer's material were revised to incorporate improvements resulting from the pilot program, and new additional information such as: information for modular retailers, participants workbook, and marketing and promotional materials. These changes were necessary to ensure a high level of quality, effectiveness and consistency of the course delivery by the various provincial industry associations. This work has been completed and a number of courses have been offered with outstanding success. The program is being delivered through a partnership arrangement with provincial associations/organizations and is open to all representatives of the manufactured housing industry in Canada.

STATUS : Completed
AVAILABILITY : Seminar/training is available

CLEANING UP YOUR HOUSE AFTER A FLOOD AND CLEAN-UP PROCEDURES FOR MOLD IN HOUSES

Two CMHC publications, "Cleaning Up Your House After a Flood" and "Clean-up Procedures for Mold in Houses", are undergoing revision. These documents have been widely used since 1993. The revision will incorporate the most up-to-date information on dealing with mold and provide steps for homeowners to follow in assessing and fixing the problem.

CMHC Project Officer : *Virginia Salares*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2447 0200001
STATUS : Ongoing

DEFINING PERFORMANCE OF WATER RESISTIVE BARRIERS

Water Resistive Barriers (WRB), also known as sheathing membranes, fulfill many critical functions in the building envelope, but the means to evaluate their field performance has not been adequately developed. This is a pilot project that aims to define the key elements affecting performance of WRB in stucco systems with a view to pursuing the following objectives: 1. Develop adequate experimental characterization of likely WRB field performance. 2. Define WRB characteristics needed for input into advanced Heat Air and Moisture (HAM) models. 3. Examine probable long-term performance of WRB and in particular, study the effect of chemical leaching from stucco products and wood based materials. 4. Compare the results of wetting and drying predicted by advanced HAM models with experimental results.

It is expected that helping manufacturers and users of breather-type moisture barriers define the performance of such materials in both conventional and rainscreen walls will lead to better differentiation between applications of different WRB products as well as in development of new products.

The External Moisture Control (EMC) Consortia, comprising Canada Mortgage and Housing Corporation, the Homeowner Protection Office, E.I. Dupont de Nemours Inc., Fortifiber Corporation, and HAL Industries are funding this project. The study is being performed at Concordia University. Completion of the project is expected by spring 2003.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2490 0200001
STATUS : Ongoing

GUIDELINES FOR MOISTURE MANAGEMENT IN EXTERIOR WALL SYSTEMS

CMHC is providing financial and technical support to NRC/IRC to develop guidelines for moisture management strategies for exterior wall systems. The guidelines will address user requirements for long-term performance and durability of wall systems for the wide range of climate zones across North America.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2199 0200001
STATUS : Ongoing

GUIDELINES FOR ON-SITE MEASUREMENT OF MOISTURE IN WOOD BUILDING MATERIALS

Builders, inspectors and engineers undertaking moisture measurements on site in many instances do not possess the necessary background for using or interpreting moisture meter readings from wood and wood-based products. Because judgement is also needed in their interpretation, this document has been prepared to provide both detailed instructions and background information to assist persons involved in these endeavours. The objective of this report is to assist those not fully informed in wood moisture measurement technology and to provide general guidance with respect to measuring wood moisture content in field conditions. The document outlines the types of available moisture meters, a process of how to take moisture readings, where to take moisture readings and how the moisture readings are corrected for temperature and wood species. In addition, the document will provide a general discussion about steps builders and designers can take to minimize construction complications due to moisture.

Prepared by Forintek Canada Corp. Sponsored by Canada Mortgage and Housing Corporation and Canadian Wood Council. Ottawa: CMHC, c2001. 1 CD-ROM

STATUS : Completed CD-ROM
AVAILABILITY : Canadian Housing Information Centre

IMPROVEMENTS TO THE MOISTURE PERFORMANCE OF PRESERVED WOOD FOUNDATIONS

Previous work by Forintek, the wood industry research agency, has established that the bottom plate of preserved wood foundation walls is very often over 20% moisture content. The wood preservatives generally prevent this relatively high moisture content from causing any degradation in structural strength. However, it is possible that the wet plate will transfer moisture to the insulated cavity above. This may lead to the development of mold in the wall cavity. The objective of this research project was to retrofit a mold troubled Ottawa area preserved wood foundation to validate a practice for reducing a high moisture level and mold within the PWF cavity. The demonstration house has been modified by using fans to ventilate the lower part of the wall cavities. Wood moisture levels were monitored through 2001. The remediation was successful at preventing noticeable levels of mold in the cavities or the house air during the monitoring period. Data analysis continues to quantify the actual reductions in wood moisture levels.

CMHC Project Officer : Don Fugler ***CIDN*** : 2419 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IN-SITU MONITORING OF WOOD-FRAMED EXTERIOR WALL SYSTEMS - VANCOUVER, BC

Wood framed buildings in the lower mainland of British Columbia have experienced excessive moisture damage to both sheathings and framing materials. In recent years, with the adoption of Best Practice principles throughout the construction industry (by builders and developers, design professionals and various construction trades) coupled with regulatory amendments to the City of Vancouver building by-laws, a new generation of exterior wall assemblies incorporating a 'rainscreen' moisture management strategy has been constructed. How effective were these walls at managing the exterior moisture loads? The objective of this applied research project, funded by Canada Mortgage and Housing Corporation, is to monitor, assess and document the performance of a residential low-rise four storey, wood-framed building which incorporates rainscreen design technology, and to analyze data to determine the effectiveness of wood frame rainscreen wall

assemblies at managing exterior moisture loads. Monitoring of interior, exterior and interstitial wall areas will include temperature, relative humidity, wood moisture content and air pressure differentials. A weather station mounted on the roof of the building will capture the local weather conditions: air temperature and relative humidity, wind speed and direction and rainfall. Monitoring will be carried out for one full year, capturing the wall response to the range of climate loading conditions. Project completion is expected in the spring of 2003.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 2254 0200002
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MOLD CLEANUP PROCEDURES: CONTRACTORS' GUIDE

A draft document for professionals on Mold Cleanup Procedures is under development by CMHC. The focus of the document is on information required by contractors involved in renovation and clean-up of mold contaminated houses. As a result of rapidly evolving knowledge in this field, the current draft of the document and its mold cleanup procedures are now being revised to incorporate more current and substantive information from authoritative sources. This document will address mold cleanup in general and will include information on the precautionary measures required to protect workers and occupants, and present best practices for mold remediation. A significant change in approach since preparation of the original draft is the expert consensus that mold remediation should be approached from the perspective of the size of visible mold area rather than the type or toxicity of the molds present.

CMHC Project Officer : *Ken Ruest* ***CIDN*** : 2380 0200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

NORTHERN HOUSING

COMPARISON OF NORTHERN HOUSING COSTS

This project will outline all components associated with the production of a northern home - from soft to hard, at both the house level and community level to determine which elements, in which locations are inordinately skewing costs. Use of direct data from northern communities will verify these costs. Index communities will allow for comparison of costs between northern communities, and between the North and South. The operationalized database will permit future tracking and analysis such as life cycle performance costs; where use of local labour, indigenous materials and value-added processing of raw, local materials can be developed or expanded to reduce housing costs; and where capacity building may be of benefit.

CMHC Project Officer : *Aleta Fowler* ***CIDN*** : 2370 0200003
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CONTINUATION OF NORTHERN VENTILATION STUDY

This project is a continuation of related CMHC research into ventilation needs and performance in northern homes. Adequate, appropriate and affordable means of ventilation and verification of manufacturer's claims need to be assessed, using an established, consistent methodology. Practical and effective options for ventilation are needed to alleviate potential health problems and building damage. The report will be completed in 2002.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2420 0200002
STATUS : Ongoing

HEALTHY HOUSING IN THE NORTH: TOWARDS A NORTHERN HEALTHY HOUSE DEMONSTRATION PROJECT

This study is a review of the principles and technical information that can influence the realization of healthy and more sustainable housing in the North. The objective of this study is to begin addressing and enhancing the ecological sustainability, social appropriateness, and total (real) economic aspects of northern housing. The approach is to develop the concept of the Healthy House in a northern context.

People who design and construct housing in the North need to become more conscious of their impact on the environment, social structures and energy use. High environmental and dollar costs of fossil fuel energy in the North demand reconsideration of conventional building design, materials and technical systems. The need for repairing and reinforcing the social fabric calls for appropriate environmental and cultural design to create healthy and locally supported, self-sufficient northern communities. This study reviews and examines influences, aspirations, limitations and potential technical options for increasing sustainability in northern housing.

The study is divided into two parts. Part One is an overview of the northern context, ecological sustainability, social appropriateness, and total (real) economic aspects of northern housing. Part Two is a review of technical options and information resources.

The intent of this study is to encourage the inclusion of environmentally responsible Healthy House concepts, systems and materials in the design, construction, operation, and final disposal of housing. The study is intended for the use of decision-makers who can advance this goal and may include: homebuilders and buyers; community planners, architects, and engineers; regulators and administrators; and policy makers. Northern training institutions could also use the study to supply people with the knowledge and skills to create northern healthy housing solutions.

Ultimately, this study and its guidelines are intended to contribute to northern housing that is more ecologically sustainable and locally and socially appropriate during construction, in operation and at the end of service.

Written by Bob Bromley, Stephen Fancott, Bill Fandrick, Gino Pin. Additional writing by Donna Diakun. CMHC Project Manager: Aleta Fowler. Project Manager for Arctic Energy Alliance: Rob Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2002. iii, 76 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

MONITORING OF THE NORTH ON-SITE WASTE WATER RECYCLING MICROSYSTEMS

Two microsystems were installed in N'Dilo, NWT in the summer of 1998. These microsystems were adapted from the Toronto Healthy House model for Cold Climate application. Monitoring since installation has allowed for fine-tuning and collection of reliable data. In turn, this has proven the microsystems as economical, viable and as one of the most environmentally responsible ways in which to handle water consumption and waste water disposal. Additionally, health benefits to the occupants have been observed through upgrading of water availability. Based upon this data, these systems are now in place, or scheduled for placement in 5 Northern communities and have been marketed successfully internationally. Partners in this project include NWT Housing Corporation, GNWT's Department of Resources, Wildlife and Economic Development, Stanton Regional Health Board, Synergy Solutions and the Dene Housing Authority of Yellowknife. Three years of monitoring data will be compiled into a report.

CMHC Project Officer : *Aleta Fowler* — ***CIDN*** : N/A
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

NORTH WEB-SITE

The purpose of this partnership project is to renovate the former NoRTH Web Site and maintain this updated dedicated NoRTH Web-Site for a two year period. The project partners are CMHC, Alaska Housing and Finance Corporation, NWT Housing Corporation, University of Alaska (Fairbanks), NRCan and Yukon College. The web-site will include relevant technical information such as factsheets of research reports and the Frostline newsletter. It will also includes discussion groups to provide a means of ongoing and current communication. The web-site will supply links to other relevant web-sites and will be able to be visited at www.NoRTH-RTHN.org. Alaska Housing Finance Corporation will retain a person to post the backlog of articles, to recruit new material needed by Northern audiences, implement the planned next steps such as negotiating links to critical sites, creating a chat room format, etc. and respect the need by CMHC and NRCan to retain their harmonized "look" and post their materials in both French (supplied by CMHC and NRCan) and English.

CMHC Project Officer : *Aleta Fowler* — ***CIDN*** : 2369 0200
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet on the web

NORTHERN HEALTHY HOUSE DEMONSTRATION

A demonstration Healthy House is being planned in northern Canada. This Yellowknife demonstration builds upon a long line of research and is the necessary step in illustrating Healthy House (HH) principles and practices. This demonstration will allow interested parties to view the performance and use of Healthy Housing components, permit informed choices for applications in the North, nationally and internationally, and encourage more widespread adoption of Healthy House and "better" housing and community models. The Demonstration will include an "educational" component and will be open to the public upon completion of construction in 2002.

CMHC Project Officer : *Aleta Fowler* — ***CIDN*** : N/A
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

NORTHERN HEALTHY MIXED-USE BUILDING DEMONSTRATION

The purpose of this project is to provide financial support for a documented process for creation of a mixed-use, multi-storey building which meets healthy housing objectives and resolves issues of higher upfront costs; site selection and land acquisition in the North; land ownership issues for a unique building; building tenure; Northern financing; Northern regulatory requirements; utility provision; and other pre-development considerations.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2471 0200002
STATUS : Ongoing
NEW

NORTHERN LANDSCAPING: A GUIDE TO RESTORING THE PLANTS AND SOIL IN NORTHERN COMMUNITIES

This guide looks at ways disturbed northern soils, which are so common, can be made viable for plant growth - and subsequently, determines means of inducing plant growth in these disturbed areas. The guide is intended to help people in northern communities establish low-maintenance, "natural landscaping" appropriate to their region. The information will be useful to anyone involved in a community revegetation project including elected officials, contractors, schools and clubs, and other interest groups. It is not a guide to restoring contaminated sites, industrial sites, or for large ecological restoration projects. It is suitable for smaller-scale planting projects within communities. The emphasis is terrestrial (dryland) areas, though wetland (not fully aquatic) areas are also considered.

Natural landscaping involves the planting of a group of usually native species to meet some specific, aesthetic, management or design goals. Potential project sites are often already semi-natural, such as road embankments, stream edges, vacant lots or other community lands where the plants and soil were disturbed. Areas around homes and other buildings also have potential for natural landscaping. Planting new semi-natural areas which resemble the original ecosystems can beautify the community and produce other benefits, including:

-- creation of habitat for wildlife such as birds and squirrels;
-- reducing blowing dust;
-- protecting soils from erosion;
-- providing meaningful ways to educate about the natural environment;
-- fostering environmental awareness in a direct, hands-on, way;
-- building a sense of community by pursuing and achieving common goals.

Techniques described in this guidebook will help achieve these kinds of goals with little input of energy and resources such as water, fertilizers, and fuel, etc. once the revegetated area is established. A virtually self-supporting system is the goal.

Prepared by Avens Associates Ltd. Prepared for Research Division, Canada Mortgage and Housing Corporation. CMHC Project Officer: Aleta Fowler. Ottawa: CMHC, 2002. 87 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

UPDATE THE NORTHERN UTILITY COSTS REPORT

In 1995, the NWT Housing Corporation commissioned one of the most useful reports for the North, "Utility Costs in Public Housing". It covered every community in NWT (and in, what is now, Nunavut) outlining the subsidized and unsubsidized rates for water and sewer, electricity and heating. Average cost break-outs were calculated for each region and the percentage of monthly costs allocated toward each utility was measured. This report has been instrumental in justifying and strongly illustrating the cost savings of new technologies such as on-site waste water recycling microsystems. CMHC is updating this utility cost report to expand upon four additional aspects:

-- inclusion of the entire North: Labrador, Nunavik, Nunavut, NWT and Yukon;

-- the source of electricity (hydro, diesel generator) and whether it is a franchise or not;

-- the source of heating fuel (oil, wood, propane, natural gas); and

-- a separate category including access to phone and internet service.

The updated report will be available in 2002.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2467 0200001
STATUS : Ongoing

USE OF COMPRESSED-AIR-FOAM TECHNOLOGY FOR FIRE PROTECTION OF HOUSING IN THE NORTH

The high cost of northern housing, and housing insurance, may justify the installation of fixed automatic fire suppression systems. Conventional sprinkler systems require more water than is presently available in buildings and would entail substantial re-design. Further, although sprinkler systems may allow some occupants of the building time to exit, and may allow time for fire fighters and equipment to arrive, water damage in suppressing the fire usually damages the building beyond reasonable repair. The National Research Council of Canada (NRC) has developed a compressed-air-foam (CAF) system which uses 10% of the water required by conventional sprinkler systems. Further, it is designed to extinguish, not just contain or suppress, fires. This study is a partnership project. It will look at the preliminary feasibility of the design of a self-contained CAF system for a building (optimal CAF piping and discharge), assessment of the water requirements for the CAF system, and the development of appropriate CAF nozzles.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2311 0200002
STATUS : Ongoing

USE OF ON-SITE WASTE WATER RECYCLING MICROSYSTEMS FOR SPRINKLER SUPPLY

With microsystem technology, excess water of "swimming pool" quality is constantly produced which must be periodically pumped away, or disposed of on-site. This excess water could be easily stored for sprinkler use. In the North, loss of life due to fire is 10 times higher than in the South. Building loss, when a fire occurs, is nearly 100%. Most communities rely upon volunteer fire departments and upon reservoirs which have limited capacity. Alternatives are needed and this study will determine the means and feasibility of taking this next step.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : N/A
STATUS : Ongoing

NORTHERN HOUSING

YUKON FLEX/HEALTHY HOUSING DEMONSTRATION

Yukon Housing Corporation (YHC) is developing a mortgage incentive program for people who choose to incorporate Flex and Healthy Housing features into their homes. CMHC is partnering with YHC to develop a Demonstration Home which illustrates use of these features and documents the decision-making points, the regulatory issues, the design and construction processes, and the final user reactions. The home will be open to the public for observation as well. Construction is planned for summer 2002; the home will be open to the public shortly thereafter, concurrent with publication of the report documenting the Demonstration.

CMHC Project Officer : *Aleta Fowler*
CIDN : 2469 0200001
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

PROPERTY MANAGEMENT

CONTRACT MANAGEMENT COURSE FOR RESIDENTIAL PROPERTY MANAGERS AND BUILDING OWNERS

This project will develop course content to provide an introduction to construction/contract management processes for residential property managers, building owners and anyone involved in the administration of multi-unit residential buildings. The course material will be as applicable to the management of major service contracts as it is to major construction works including repair, replacement and/or rehabilitation projects. Topics covered in this course include the different types of construction or service contracts, a discussion of the construction process, administering the tendering process, evaluating the tendered bids, contractor/consultant selection, bonding and insurance requirements, the building owners responsibilities and those of the contractor/consultant. This project should be completed by late in 2003.

CMHC Project Officer : *Silvio Plescia*
CIDN : N/A
Division : Policy and Research Division
STATUS : Planned
AVAILABILITY : Product is not yet available
NEW

ECO-ASSESSMENT TOOL FOR PROPERTY MANAGERS OF MULTIPLE UNIT RESIDENTIAL BUILDINGS (MURBS)

The purpose of this project was to develop the MURB Tool with the objective of obtaining a self-assessment procedure which is easily accessible and which is relevant to Canadian property managers.

STATUS : Completed
AVAILABILITY : Product is available on the web

REVISIONS TO THE OPERATING GUIDES FOR OWNERS, MANAGERS AND CUSTODIAL STAFF

This project will revise, update, and make print-ready the publications presently known as the CMHC Multi-Residential Manager and Owner Maintenance Manuals. The publications provide best practices for property owners and managers and provide operational instructions for on-site staff.

PROPERTY MANAGEMENT

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 2501 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

TECHNICAL AUDIT COURSE FOR PROPERTY MANAGERS

This project, funded by Canada Mortgage and Housing Corporation in partnership with the Real Estate Institute of Canada, aims to develop a course for property managers on the technical audit of high-rise residential buildings. Using a building as a system approach, this course will provide property managers and building owners with a perspective of the interaction of all building systems and components. Such training is not available to residential property managers in Canada. Technical audits, an organized review of building systems, are an effective way to assess the condition of a building, to understand how the building is performing and to provide a sound basis for making maintenance, repair and upgrade decisions. The course provides the property manager with insights into the technical audit process and highlights the requirements for undertaking technical audits of residential buildings including the scope of the work and the consultant qualifications. The course also introduces the fundamental principles of building science to encourage holistic solutions to building problems. The course documents are expected to be completed by end of 2002.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 2297 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

RENOVATION AND INSPECTION

CANADIAN HOME INSPECTORS AND BUILDING OFFICIALS NATIONAL INITIATIVE - PHASE II

With the successful completion of the first phase of this multiphase project, which was to develop national occupational standards for the private home inspection and municipal building code inspection sectors, the Canadian Home Inspectors and Building Code Officials are now preparing for Phase II which is to use the occupational standards to:

- conduct a gap analysis to identify any curriculum and training needs;
- develop curriculum and training programs to meet their needs;
- identify a certification and accreditation model that could be adopted for their industry sectors;
- establish an accreditation program for institutions delivering training programs.

This project is supported by the private and public inspection industry sectors, Human Resources Development Canada (HRDC) and CMHC. A proposal was developed and recently submitted to HRDC requesting their assistance with Phase II. It is anticipated that Phase II will commence in May, 2002 and will be completed by December 2003. Following the completion of Phase II, the two sectors should be in a position to implement the certification programs for their respective industry sectors under Phase III.

CMHC Project Officer : *Darrel Smith* ***CIDN*** : 1962 0200002
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : There will be no product for this project

GUIDE FOR THE HEALTHY RENOVATION OF A ONE STOREY HOUSE CIRCA. 1960-1979

The objective of this project is to provide consumer information on typical approaches to the repair and renovation of bungalow-style houses built between 1960-1979. The advice considers occupant lifestyle and needs, structural and maintenance requirements, "Healthy Housing" improvements (including environmental and energy-efficiency), and the impact on home equity and resale value. The publication will include case studies of common renovations to this style of house. The guide will resemble the initial publication in this series which describes appropriate renovations to 1½ storey houses. The report is being prepared for publication.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2202 0200001
STATUS : Ongoing

HIRING A HOME INSPECTOR. ABOUT YOUR HOUSE; CE35

This fact sheet offers helpful guidance to consumers on questions to ask and what to look for when in the market for a qualified home inspector. The fact sheet was done in consultation with the private home inspection industry through members of the Canadian Association of Home and Property Inspectors (CAHPI) as well as through home and property inspector members of the Canadian Home Inspectors and Building Officials Committee. The fact sheet includes information on the following:

- current situation (who is out there and what regulations exist);
- CAHPI's national initiative (purpose and objectives);
- services provided by home inspectors and why they are needed;
- questions to ask and what to look for when hiring a home inspector; and
- what to expect (time involvement, cost, written report).

Ottawa: Canada Mortgage and Housing Corporation, 2002, c2001. 4 pages

Order number: 62839

Note: Aussi disponible en français sous le titre : Le choix d'un inspecteur en bâtiment

STATUS : Completed Fact Sheet
AVAILABILITY : CMHC Information Products and on the CMHC web site

MANDATORY HOME INSPECTIONS ON RESALE HOMES IN ONTARIO

A CMHC External Research Program (ERP) grant has been awarded to research the issue of mandatory home inspections for resale homes in Ontario with a number of housing industry interest groups. The results will be an attempt to determine why this requirement was never imposed in the past, the pros and cons of enacting such a requirement in the future, and how could such a requirement be enacted and by whom. The study will also investigate if the existing home inspection industry could handle the increased capacity of such a requirement. The research is underway and is anticipated to be completed by summer 2002.

CMHC Project Officer : *Darrel Smith*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200015
STATUS : Ongoing

MERGE THE EXISTING NATIONAL AND PROVINCIAL ASSOCIATIONS INTO ONE NEW NATIONAL ENTITY TO REPRESENT THE PRIVATE HOME AND PROPERTY INSPECTION INDUSTRY ACROSS THE COUNTRY

The objective of this project was to assist the private home and property inspection industry as it merges the existing national and provincial associations into one new national entity, i.e. the Canadian Association of Home and Property Inspectors (CAHPI). CAHPI will represent the private home and property inspection industry across the country. On behalf of CAHPI and the Canadian Association of Home Inspectors (CAHI), a consultant facilitated a planning process and developed a strategy outlining the necessary steps for the orderly progress of this merger into CAHPI. This project is complete and industry is implementing steps for merging their associations.

STATUS : Completed
AVAILABILITY : There will be no product for this project

RECYCLE: LIFECYCLE - HOW TO RENOVATE A HOME FOR CHANGE

This project's objective is to provide a set of design strategies for adaptable renovations involving a variety of common, detached housing types. The goal of these strategies is to inform homeowners, or prospective homeowners, of ways to achieve the greatest flexibility through alterations and additions to their houses to meet their changing needs.

CMHC Project Officer : *Thomas Parker* ***CIDN*** : 2437 0200014
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Research highlight is not yet available

REVISION OF HOME CARE: A GUIDE TO REPAIR AND MAINTENANCE

The purpose of this project is to do a major update and revision of Home Care: A Guide to Repair and Maintenance. As part of the revision, the publication titled New Life for an Old House, which is no longer in print, will also be reviewed and where appropriate the information on home repair will be incorporated into Home Care to produce one comprehensive home maintenance and repair guide. The revised publication will include information from recent research and more specifically on topics including; home inspection, home repair (not renovation), home maintenance, Healthy Housing and FlexHousing tips, and how to hire a contractor, as part of the update. The content will emphasize Canadian issues whenever possible to differentiate it from similar American products. A steering committee comprised of First Nations members, a home inspector and CMHC staff has been struck to help guide the consultant. Revisions to the manuscript are currently underway and are anticipated to be complete by Summer 2002.

CMHC Project Officer : *Darrel Smith* ***CIDN*** : 2516 0200002
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DESIGN CHARRETTES TRANSFORMING YOUR PRACTICE - INTEGRATED DESIGN CHARRETTES FOR SUSTAINABLE BUILDINGS

The objective of this project is to inform participants of the latest research findings on sustainable building design and to train participants in the methodology of the integrated design process and the tools required in designing sustainable building, so that they can initiate this process in their own design practices. Integrated Design Charrettes will be organized in different cities across Canada.

CMHC Project Officer : *Sandra Marshall*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2474 0200002
STATUS : Ongoing
NEW

DEVELOP A SET OF ENVIRONMENTALLY SUSTAINABLE SITE AND BUILDING DESIGN, CONSTRUCTION AND OPERATION GUIDELINES FOR SINGLE AND MULTI-FAMILY UNIT HOUSING, MOTELS AND HOTELS FOR THE TOWN OF BANFF

The purpose of this project is to develop a set of environmentally sustainable site and building design, construction and operation guidelines for single and multi-family unit housing, motels and hotels for the Town of Banff in a manner which could be used to inform the development of similar guidelines for other communities across Canada.

CMHC Project Officer : *Doug Pollard*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2309 0200001
STATUS : Ongoing

LIVING BY WATER GUIDEBOOK

The objective of this project is to prepare, publish, market and distribute a guidebook for waterfront residents on reducing environmental impacts of housing on aquatic and shoreline habitat.

CMHC Project Officer : *Susan Fisher*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2040 0200001
STATUS : Ongoing

TRANSFORMING YOUR PRACTICE: INTEGRATED DESIGN CHARRETTES FOR SUSTAINABLE BUILDINGS: TORONTO CHARRETTE RESULTS

This charrette took place in Toronto, at the City of Toronto's Metro Hall, November 7th and 8th, 2001. The objective of the Toronto Charrette event was to use the integrated design process (IDP) to push the boundaries of building performance towards more sustainable practices. the sessions were intended to take a varied complement of professionals through an integrated design process in the context of a new project, so that they would "learn by doing" and be able to use IDP within their own practice.

Four partners supported Canada Mortgage and Housing Corporation in this event: Enbridge Consumers Gas, City of Toronto's Better Buildings Partnership, Natural Resources Canada's Office of Energy Efficiency, and the Canadian Energy Efficiency Alliance.

The goals of the partners were to:
-- Establish a forum where a multi-disciplinary group of design professionals could work together on a sustainable design project,
-- Gain insights into sustainable building practices, and

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

-- Learn how to advance building performance, starting from design conception to understanding of operations issues, building on each others' unique perspectives and expertise.

This document discusses the integrated design process and reports on the results of the charrette.

Prepared by IndEco Strategic Consulting Inc. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Sandra Marshall. Toronto: IndEco Strategic Consulting Inc., 2002. 96 pages

STATUS : New Completed Report
AVAILABILITY : On a loan basis from: Canadian Housing Information Centre

WATER CONSERVATION, REUSE & MANAGEMENT

CASE STUDIES OF WATER CONSERVATION INITIATIVES IN MULTIS

CMHC, in partnership with City of Toronto Better Buildings Partnership, will document case studies of water conservation retrofits for multi unit residential buildings. The building profile, water conservation measures, costs and resulting water and energy savings will be described. The studies will serve as examples to encourage water use efficiency in other building and will appear on CMHC's website.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 2239 0200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

DUAL FLUSH TOILET PILOT PROJECT

CMHC is working with a number of municipalities across the country to conduct a pilot program for dual flush toilet systems in a variety of buildings. This study will monitor water consumption and toilet performance as well as customer satisfaction with the dual flush system. Twelve agencies from eight provinces are participating in the project which will see toilets installed in single family homes, multi unit residential buildings, municipal and commercial buildings. These dual flush toilets will be compared to typical 13L and 20L toilets as well as Ultra Low Flow 6L toilets on a consumption and cost basis. Anticipated results of this work will be the increased awareness of dual flush systems across the country, and an improved ability to overcome regulatory, technical, and perceptual obstacles.

CMHC Project Officer : *Catherine Soroczan, Sandra Baynes*
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***CIDN*** : 2336 0200

ECONOMIC FEASIBILITY STUDY OF WATER REUSE AND TREATMENT TECHNOLOGIES

The purpose of this project is to undertake and complete an economic feasibility study of water reuse and treatment technologies. The contractor will assess ten case studies of on-site water reuse applications. The final draft has been received and the case studies will be uploaded to the CMHC water website on a monthly basis. Further attention is being paid to the financial aspects of water reuse and full costing.

STATUS : Completed
AVAILABILITY : Product is available on the web

IMPLEMENTATION STRATEGIES FOR WATER CONSERVATION

The objective of this project is to evaluate the effectiveness of CMHC's Household Guide to Water Efficiency. The project entails studying the indoor and outdoor water consumption in four distinct, yet similar residential communities of approximately 300 to 500 homes each in the region of Halton. Different levels of program delivery will be assigned to each community.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 2506 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet on the web ***NEW***

MAXIMUM DAY WATER DEMAND REDUCTION MONITORING AND EVALUATION PROJECT

The objective of this project was to identify and implement a water efficiency measure targeted at reducing maximum day water demands and be responsible for all related costs associated with implementing the identified measure - these costs will depend on the measure selected by each municipality and the method of implementation used. Preliminary results have been received in draft form. Results show that indoor water consumption was reduced for a number of the conservation methods used. A follow-up study commenced Summer 2001 to determine: impact on outdoor water consumption and whether conservation is maintained over a long period.

STATUS : Completed
AVAILABILITY : Product is available on the web

MAXIMUM DAY WATERING DEMAND PHASE II - ASSESSMENT OF WATER CONSERVATION STRATEGIES

This project's objective is to determine the impact of the Household Guide to Water Efficiency on indoor and outdoor water consumption. Specifically it will seek to address the questions: Is the impact on consumer behaviour maintained in the long term, what effect does the Guide have on outdoor water use during the summer months, and what extra impact does a complementary social marketing campaign have on consumer behaviour? This work is part of the second phase of the Max Day project initiated in 2000, which saw a reduction in consumption rates based on conservation method used.

Although not conclusive, the data analysis indicates that demands were reduced in the two study areas after the related programs were implemented. The data related to the Survey Area was not conclusive as there was almost no irrigation subsequent to the survey being performed. It appears that the distribution of the Household Guide to Water Efficiency was responsible for a savings of between 34-54 litres per household per day (combined indoor and outdoor use). The analysis also shows that the "Drop-Off" and "Phone" methods of delivery had cost-benefit ratios of .39 and .37 respectively i.e. both methods are more than twice as cost-effective as infrastructure expansion. The widely fluctuating irrigation demands during the summer of 2001 make it difficult to accurately assess the effectiveness of the three methods of distributing the Household Guide to Water Efficiency. The analysis was further complicated by the implementation of a watering ban during the monitoring period.

CMHC Project Officer : *Catherine Soroczan, Sandra Baynes*
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***CIDN*** : 2341 0200003

PERFORMANCE ASSESSMENT OF LOW FLOW TOILETS

This project's objective was to set up and conduct a monitoring program to verify the flush volumes of Ultra Low Flow (ULF) toilets installed in single-family homes as part of Durham's retrofit program. Initial results indicated that depending on the brand of toilet installed there is a mixed reaction to ultra low flow technology.

STATUS : Completed
AVAILABILITY : Product is available on the web

REMOTE MONITORING AND CONTROL OF ON-SITE WASTEWATER TREATMENT, RECYCLING AND RE-USE SYSTEMS

This External Research Project addresses remote monitoring and control of systems for on-site wastewater treatment, recycling, and re-use. Effective, reliable, and long-term performance of even the simplest of these systems requires at least periodic monitoring, and the most sophisticated systems require continuous monitoring and control capability.

There are two objectives to this research: 1. To produce a resource document for multi-stakeholders: planners, managers, regulators etc. who have interests or responsibilities related to systems for on-site wastewater treatment, recycling, or reuse; and 2. To produce a supplementary document that will propose ways in which the contents of that document can be communicated most effectively to those users.

CMHC Project Officer : *Sandra Baynes*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200020
STATUS : Ongoing

SAFE EFFLUENT WASTEWATER RECOVERY SYSTEM (SEWRS)

This project is focusing on greywater systems for single family homes. Although the performance data collection will be for homes in southern Ontario and thus be not directly to the more northern parts of Canada, the final report will address changes required in these systems for application in the colder climate of the North.

CMHC Project Officer : *Sandra Baynes*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200022
STATUS : Ongoing
NEW

WATER AND SEWAGE HANDLING SYSTEMS IN NORTHERN AND REMOTE COMMUNITIES

This project's objective is to collect and publish in fact sheet format the following information on water and sewage handling systems in northern and remote communities: description of the technology and construction, engineering application and performance, capital and operating costs and any available user case studies. It is proposed that this project include the demonstration and monitoring of 6-10 "EcoSeptic" micro-sewage systems in a northern Ontario or Manitoba community with severe pollution problems that is willing to consider less costly alternatives to conventional sewage infrastructure. A suitable test site/community for the demonstration of "EcoSeptic" micro-sewage systems has not yet been secured. However another developer of an innovative micro-sewage system has secured five test installations in southern Ontario and Quebec. It is planned that these systems will be monitored for a period of at least eighteen months.

CMHC Project Officer : *Chris Ives* ***CIDN*** : N/A
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

WATER EFFICIENCY CASE STUDIES

The purpose of this project is to develop six case studies focusing on specific residential water efficiency initiatives that are being delivered by six cities across Canada. Final product will be available on the web site.

CMHC Project Officer : *Sandra Baynes* ***CIDN*** : 2239 0200004
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

WATER QUALITY MONITORING OF THE TORONTO HEALTHY HOUSE

The purpose of this project is to undertake the collection of water samples along various points from the Toronto Healthy House Water Reuse System and have them analyzed for a number of water quality parameters. Monitoring is underway and is scheduled for completion mid 2002.

CMHC Project Officer : *Catherine Soroczan, Sandra Baynes* ***CIDN*** : 2337 0200002
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SOCIO ECONOMIC RESEARCH

ADAPTATION OF POTENTIAL HOUSING DEMAND MODEL TO ABORIGINAL COMMUNITIES - AN EXAMPLE

This study will build on the results of a feasibility study that looked at the application of CMHC's potential housing demand model in Aboriginal communities. It will take the recommended actions and apply them to a test case of the Nishnawbe Aski Nations (NAN), a grouping of 49 bands in Northern Ontario. Some specific tasks will be: to monitor the degree of difficulty that NAN administrators encounter in gathering accurate input data, to refine the assumptions on headship rates and household types that will be parameters for the model. Eight communities from NAN will be piloted in a first phase, and if successful, the other communities will follow as Phase 2.

CMHC Project Officer : *Phil Deacon*
CIDN : N/A
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

COMMUNICATIONS & INFORMATION TRANSFER STRATEGY FOR ABORIGINAL GROUPS

The goal of this project was to develop a communications and information transfer strategy that will help CMHC in its interactions with Aboriginal housing groups regarding capacity development, research and information transfer activities. To be effective, information has to reach the audience that matters and be in formats that have the maximum impact.

The study looked at the barriers to finding and using housing related information, what makes housing related information relevant, what are key influences, and how effective are the available communications vehicles and distribution channels, all in regard to Aboriginal audiences.

The project consisted of: an assessment of existing communication strategies and marketing research in the area of housing information and training; personal or telephone interviews with senior officials of key national and provincial stakeholder groups; group discussions with a broad range of the key client groups as defined in target audiences; and development of alternative communications and information transfer strategies for CMHC and assessment of their relative costs.

The target audience for this project is made up of: key decision makers in housing operations and policies, provincial organizations chosen to give regional coverage, major national organizations, and regional CMHC program officers.

The geographic coverage is Canada wide. All types of Aboriginal community, on or off-reserve in rural, remote and urban communities are included.

Prepared by Poirier Communications. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Philip Deacon . S. l.: Poirier Communications, 2000.
2 volumes: vol. 1 Final Report (130 pages); vol. 2: Dialogue Circle Transcripts (85 pages)

STATUS : New Completed Report
AVAILABILITY : On an Interlibrary Loan basis from:
Canadian Housing Information Centre

ALTERNATE ABORIGINAL TRAINING DELIVERY OPTIONS

Experience over the past several years has shown the need to explore alternate approaches to delivery of training to First Nations (FN) communities and other Aboriginal groups. A small study is underway to look at the feasibility of FN and other Aboriginal groups sharing training expertise and resources by a number of innovative techniques, to supplement the more conventional approach.

The study will examine the various possibilities of training sharing, how logistics could work, what sort of recompense the trainer or "training community" should expect, etc. It is hoped that the results will point to directions that may extend training delivery resources, provide more effective "hands on" training, and support capacity development.

CMHC Project Officer : *Marcelle Gareau*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 01PLO-8426
STATUS : Ongoing

EFFECTS OF URBAN ABORIGINAL RESIDENTIAL MOBILITY AND SERVICE PROVISION

This project will examine the effects of Aboriginal urban mobility upon service provision in areas such as housing, education, and health care in both the private and public sectors. The project is aimed at examining the effects of Aboriginal urban mobility upon the provisions of services to Aboriginal people in Winnipeg and Regina.

CMHC Project Officer : *Marcelle Gareau*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2436 0200
STATUS : Ongoing

EXAMINING INUIT SPACE USE IN EURO-CANADIAN HOUSE FORMS

This project is intended as the initial phase of a long term investigation of Inuit spatial behaviour in Euro-Canadian house forms.

CMHC Project Officer : *Marcelle Gareau*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200019
STATUS : Ongoing

FIRST NATIONS HOUSING PROPERTY MANAGEMENT TRAINING COURSES AND RESOURCES

This project's objective is to undertake and complete the identification and assessment of First Nations housing property management training courses and resources and provide recommendations for a comprehensive curriculum and innovative approaches to delivery in remote communities.

CMHC Project Officer : *James A Rockwood*
Division : Assisted Housing Division
AVAILABILITY : Product is not yet available

CIDN : 2374 1500001
STATUS : Ongoing

INVESTIGATING AND DOCUMENTING FIRST NATION TECH SERVICES INSTITUTES

The objective of this project is to undertake the profiling of three First Nation technical services organizations for the purpose of documenting organizational success factors in a user-friendly framework.

CMHC Project Officer : *Alain Croteau*
Division : Assisted Housing Division
AVAILABILITY : Product is not yet available

CIDN : 2475 1500002
STATUS : Ongoing
NEW

MEASURING RESIDENTIAL MOBILITY OF URBAN ABORIGINAL PEOPLE

This pilot study provides information about how a survey methodology can be used to identify patterns of residential mobility among urban Aboriginal populations. The objectives of this pilot study were to design and test such a survey methodology, not to support statistically significant inferences for Aboriginal populations in urban centres. A questionnaire was developed and tested with a sample of 144 Aboriginal respondents living in two urban centres -- Toronto (73) and Winnipeg (71). The sample included respondents from First Nations (96), Métis (40), Inuit (4) and other Aboriginal groups (4). Fourteen Aboriginal organizations in the two selected cities identified respondents, the majority of whom were women, and participated in the survey administration. Information was gathered between November, 1999 and January, 2000 using in-person interviews, telephone interviews and self-administered questionnaires.

Substantive issues dealt with general topics such as residential migration and mobility, frequency and duration of homelessness, current and projected housing needs, empirical linkages and diversity (gender, income, employment, education) of the study population. Survey design issues dealt with Aboriginal consultations, representative pre-testing, literacy and survey administration methods. Respondents took an average of 35 minutes to complete the pre-test version of the questionnaire. The section on Moves (Migration and Mobility) provided the greatest recall challenge for respondents.

The pilot study demonstrated that details of past moves can be tracked, within limits. The survey tracked up to three moves within a five year time period based on respondent recall. Field team reports indicate this horizon may be the practical limit of accurate recall. Some data quality problems were associated with questions such as changes in household type and size. The pilot survey explored the reasons and motivations behind the moves of Aboriginal people living in urban areas -- what some experts characterize as "push" and "pull" factors. While very preliminary, the pilot survey results were broadly similar to the results of the 1991 Aboriginal Peoples Survey (APS) which showed that family, employment, housing and education are the major reasons for moving. The pilot survey also successfully identified reasons for moves, using questions or probes to identify different types of housing-related reasons for moves. Reasons differ for in-city (mobility) versus to-city (migration) moves. Housing was a bigger factor for in-city moves while work and education were more important for people moving across city boundaries.

The pilot survey explored in some detail housing-related reasons for moving such as affordability, better quality, and housing that better suits household needs. Cumulatively, these different housing-related factors were identified by almost two-thirds of respondents as underlying their most recent move. This is much higher than the percentage of respondents to the APS who identified housing as a factor in either migration or mobility.

Prepared by Turtle Island Associates. Prepared for Research Division, Canada Mortgage and Housing Corporation. CMHC Project Officer: Philip Deacon. Ottawa: CMHC, 2002 printing. (Aboriginal Housing Series) 86 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

ABORIGINAL HOUSING

URBAN ABORIGINAL PERCEPTIONS OF ACCESS TO HOUSING

The objectives of this project are:
1) To obtain baseline data on the nature and extent of discrimination in housing that Aboriginal people experience - case studies focus on Winnipeg and Thompson, Manitoba.
2) To quantitatively and qualitatively examine the key variables associated with housing discrimination for Aboriginal people, including such factors as residential migration/mobility, social cohesion, and ethnic clustering.
3) To explore the effect that discrimination in housing for Aboriginal people has with regard to other victimization. This will be done by comparing the housing related factors to a more general survey of victimization (National Community Victimization Project) being carried out by Simon Fraser University with a SSHRC grant.

CMHC Project Officer : *Phil Deacon*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1990 0200001
STATUS : Ongoing

URBAN ABORIGINAL RESIDENTIAL MOBILITY

This project's objective is to examine the effects of urban Aboriginal residential mobility upon public and private service provision in areas such as the housing, education and health care sectors in the Census Metropolitan Areas of Regina, Saskatchewan and Winnipeg.

CMHC Project Officer : *Marcelle Gareau*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2436 0200001
STATUS : Ongoing
NEW

CHILDREN'S ENVIRONMENTS

HOUSING FORM AND QUALITY IN RELATION TO CHILDREN'S MENTAL HEALTH

This External Research Project (ERP) will examine whether housing form and quality are related to the socio-emotional health of children. It will use standardized measures of housing quality and mental health, two major housing forms (single family and low-rise cluster), and will consider the role of various potentially moderating influences, including socioeconomic status and indoor population density to answer the basic question: "How, if at all, does housing form and quality affect the socio-emotional health of urban Canadian children."

CMHC Project Officer : *Fanis Grammenos*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200013
STATUS : Ongoing

CONCEPT OF A QUALITY LOCATION AND THE CENTRAL DISTRICTS OF MONTRÉAL

The primary scope of the proposed research will be to develop an approach based on sustainable development and aimed at better evaluating the capacities of an urban area to enhance its living conditions. In so doing, we believe that the proposed approach will support any measures to establish more effective guidelines for the improvement of these capacities.

CMHC Project Officer : *Paul Cardinal*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200008
STATUS : Ongoing

DEMONSTRATION OF FULL-COST ACCOUNTING TOOLS AND TECHNIQUES

The objectives of this project are:
1. To demonstrate the benefits of using full-cost accounting tools and techniques to evaluate the social, economic and environmental costs and impacts associated with urban growth.
2. To analyze the full costs and impacts of growth in selected infrastructure areas for the Fraser Valley Regional District as a case study for these purposes.

CMHC Project Officer : *David D'Amour*
Division : Strategic Planning Division
AVAILABILITY : Product is not yet available

CIDN : 2127 0200001
STATUS : Ongoing

REQUALIFICATION OF SUBURBS AND REGULATORY FRAMEWORKS: CURRENT SITUATION AND EASING MEASURES

The objectives of this study are, first, to analyze the current regulatory frameworks that could support proposals for the requalification of Quebec suburbs and, second, to propose measures that could be introduced to make it easier for these districts to adapt to the social and physical changes that they are undergoing.

CMHC Project Officer : *Philippe LeGoff*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200018
STATUS : Ongoing

WHY CITIES MATTER: CANADIAN CITY-REGIONS IN A GLOBAL AGE

This project aims to further the learning process within and across policy communities by mapping the knowledge about city-region experiences.

CMHC Project Officer : *Mark Holzman*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2543 0200001
STATUS : Ongoing
NEW

CONSUMER PROTECTION

ISSUES PAPER ON LIABILITY IN HOUSE CONSTRUCTION

This project's objective is to produce a paper discussing the issue of liability in housing construction across Canada and identify who is and is not liable.

CMHC Project Officer : *Mark Holzman*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1920 0200001
STATUS : Ongoing

COOPERATIVE AND NON-PROFIT HOUSING

2001 COOPERATIVE HOUSING SURVEY

The purpose of this project is to complete the required inspections under the 2001 cooperative housing survey, prepare reports and submit completed reports to the survey consultants.

CMHC Project Officer : *Allan Dobie*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available

CIDN : 2439 0501002
STATUS : Ongoing
NEW

COOPERATIVE HOUSING PROJECTS IN DIFFICULTY

The purpose of this project is to analyze the causes of cooperative housing projects being in difficulty.

CMHC Project Officer : *Graham Murray*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available

CIDN : 2485 0500008
STATUS : Ongoing
NEW

COST OF CO-OPERATIVE HOUSING

The purpose of this project is to conduct a study of the cost of cooperative housing.

CMHC Project Officer : *Graham Murray*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available

CIDN : 2439 0501001
STATUS : Ongoing

CRISIS SITUATIONS IN COOPERATIVES: INCREASING UNDERSTANDING TO IMPROVE INTERVENTION

This research project concerns crisis situations in housing cooperatives: the conditions in which they emerge, but especially the dynamics put in place to resolve them.

CMHC Project Officer : *Marie Murphy*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2018 0200001
STATUS : Ongoing

COOPERATIVE AND NON-PROFIT HOUSING

EVALUATION OF COOPERATIVE HOUSING

The objective of this project is to conduct surveys for an evaluation of cooperative housing. Original data will be gathered from surveys of occupants of cooperative housing projects (and of occupants of other housing types for comparative purposes), from members of boards of directors and managers of housing projects, and from portfolio managers. In addition, an inspection of housing conditions will be completed by professional building inspectors.

CMHC Project Officer : *Graham Murray* — ***CIDN*** : 2485 0500001
Division : Audit and Program Evaluation Services — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

PUBLIC HOUSING TENANT SELF-MANAGEMENT: AN EVALUATION OF THE ALEXANDRA PARK CO-OP CONVERSION PROCESS IN TORONTO

The purpose of this project is to produce an independent review and analysis of the conversion process that has taken place at Alexandra Park/Atkinson Co-op.

CMHC Project Officer : *Vernon Barkwell* — ***CIDN*** : 2305 0200020
Division : Policy and Research Division — ***STATUS*** : Planned
AVAILABILITY : Product is not yet available

DISCRIMINATION IN HOUSING

HOUSING DISCRIMINATION IN CANADA: THE STATE OF KNOWLEDGE

This report is based on a review of research findings on housing discrimination in Canada, an assessment of the strengths and weaknesses of the research methods used, and a field consultation on current issues with informants from various stakeholder groups, e.g., landlord representatives, tenant advocates, real estate and financial representatives.

Much of the research has focused on perceptions of discrimination among ethno-racial minority groups. Generally, the studies are small-scale, use survey methods, use measures of perceived discrimination, and are limited to a few cities and to the rental sector. Findings from quantitative studies conducted from 1957 to 1996 show that racial discrimination is a continuing problem. More recent studies have documented discrimination against women. Other legally prohibited grounds for discrimination, e.g., family status, receipt of social assistance, age, disabilities, and sexual orientation, have not been part of any systematic research. Virtually nothing is known about discrimination in the housing sales market, mortgage lending, or home insurance.

There is widespread agreement that the existing data on housing discrimination are inadequate for directing policy decisions. This report concludes with a research agenda that would address current knowledge gaps.

Prepared by Sylvia Novac, Joe Darden, David Hulchanski, and Anne-Marie Seguin with the assistance of Francine Bernèche. CMHC Project Officer: Phil Deacon. Ottawa: Canada Mortgage and Housing Corporation, 2002. 96 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

HOME OWNERSHIP

ENHANCING THE APPLICABILITY AND USEFULNESS OF CMHC'S HOMEOWNER'S MANUAL FOR NEW HOMES

This project's objective is to expand the content of the existing Homeowner's Manual to reflect a wide range of current house construction systems and components and to enhance the Manual with additional features in order to increase the usefulness of the manual for the home purchaser and its appeal to builders and realtors.

CMHC Project Officer : *Fanis Grammenos*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2493 0200001
STATUS : Ongoing
NEW

HOMELESSNESS

APPLICABILITY OF A CONTINUUM OF CARE MODEL TO ADDRESS HOMELESSNESS

This project will examine the applicability to Canada of a continuum of care (CoC) model by conducting in-depth case studies of the CoC model in four American communities. The project will analyze the benefits and limitations of each CoC program and review its applicability in addressing homelessness in Canadian urban centres.

CMHC Project Officer : *Anna Lenk*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2353 0200001
STATUS : Ongoing

CAUSES AND CONDITIONS CONTRIBUTING TO FAMILY HOMELESSNESS AND APPROACHES TO ADDRESSING FAMILY HOMELESSNESS

This research project will provide an overview of the observable trends in the causes and conditions of family homelessness in Canada. Both the systemic/structural factors and the individual family circumstances that come to play in making families vulnerable to becoming homeless will be examined. As well, the project will investigate ways and means of addressing family homelessness through prevention, crisis intervention and re-integration strategies. Existing, emerging and innovative strategies which have proven effective or are in the vanguard of new initiatives will be reviewed. Those who provide assistance to and advocate for homeless or vulnerable families and families who are, or recently were homeless, will be consulted.

CMHC Project Officer : *Jim Zamprelli*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : N/A
STATUS : Ongoing
NEW

EVALUATING HOUSING STABILITY FOR PEOPLE WITH SERIOUS MENTAL ILLNESS AT RISK FOR HOMELESSNESS: FINAL REPORT

This report describes the development of a Housing Stability Benchmark Evaluation Procedure by the Community Support and Research Unit (CSRU) at the Centre for Addiction and Mental Health. Housing stability for people with serious mental illness (SMI) at risk of homelessness is a concept

that has remained under-developed in the research literature. This project began by convening a Housing Stability Steering Committee. A primary task of the steering committee was to work with the CSRU study team to develop a model of housing stability. In addition, a scan of the published and non-published research and program evaluation literature was conducted to identify the factors at various levels that are associated with better housing outcomes for people with SMI.

Based on the model and findings from the scan of the literature, and working with the steering committee, a table of housing stability objectives, benchmark practices and monitoring strategies was developed. In addition, a series of data collection tools were created to complete a housing stability master data sheet. The tools are used to collect information about a housing program's practices. Once entered into a master data sheet, the program's practices are compared to housing stability benchmark practices. This comparison leads to the development of action plans to improve current program practices. The tools developed for this project were pilot-tested with three housing programs in Toronto representing custodial, supportive and supported housing models.

Prepared by Community Support and Research Unit, Centre for Addiction and Mental Health. Prepared for Research Division, Canada Mortgage and Housing Corporation. CMHC Project Officer: Anna Lenk. Ottawa: CMHC, 2001. 206 pages

NOTE: No. 100 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : New Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

GOVERNANCE IN LOCAL PARTNERSHIPS TO ADDRESS HOMELESSNESS

This research will identify tools and strategies for problem-solving and decision-making within complex partnerships. This will be done by examining case studies of methods and structures of collaboration among community-based agencies and municipal governments, working on homelessness issues.

CMHC Project Officer : *Anna Lenk*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2426 0200
STATUS : Ongoing

INVOLVING HOMELESS AND FORMERLY HOMELESS CLIENTS IN PROJECTS AND PROGRAMS TO ADDRESS HOMELESSNESS: FINAL REPORT

This report is based on a study of the ways in which agencies that address homelessness involve their homeless clients in the work of the agency itself, through participation in governance structures, development of policies, work (both volunteer and paid), research and evaluation, building design and development, creative activities, community projects and training/mentorship activities.

The study examined the involvement approaches of twelve agencies in different locations across Canada. The agencies were selected to achieve good regional representation, as well as in terms of the services and programs provided and the characteristics of the homeless population served. Agencies providing services to adult women and men, youth, families and First Nations people were studied in Halifax, Fredericton, Trois-Rivières, Montréal, Toronto, Hamilton, Winnipeg, Regina, Calgary, Edmonton, Vancouver, and Victoria. The types of services provided include emergency shelter, drop-ins, supported housing, newsletter production, education/training, and counselling.

At each of the twelve sites, interviews and group discussions were conducted with management and front line staff and homeless clients of the particular agency. The final report examines the successes, pitfalls and future challenges of involving clients.

HOMELESSNESS

Prepared by Jim Ward Associates. Funded jointly by Canada Mortgage and Housing Corporation and the National Secretariat on Homelessness. CMHC Project Officer: Jim Zamprelli. Ottawa: CMHC, October 2001. 63 pages

NOTE: No. 98 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : New Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

STUDY OF TENANT EXITS FROM HOUSING FOR CHRONICALLY HOMELESS PEOPLE

This project's objective is to study the current residents and the recent evictees from a Toronto agency that has a long history of providing innovative housing and related services for the chronically homeless and 'hard to house'. It is a study of the users of the services provided by the agency, not the agency itself.

CMHC Project Officer : *Anna Lenk*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2305 0200013
STATUS : Ongoing

HOUSE CONSTRUCTION INDUSTRY

HOUSING CONSTRUCTION INDUSTRY: CHALLENGES AND OPPORTUNITIES FOR THE 21ST CENTURY

This research project will examine the evolution of the housing industry in Canada since the mid-1980s, and the industry's current and expected future challenges in the period to 2010. The study will also identify research issues which merit further investigation and study.

CMHC Project Officer : *Ian Melzer*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1987 0200001
STATUS : Ongoing

INDUSTRY PROFILE OF CANADIAN LIGHT STEEL BUILDING

This research will provide an overview of the current Canadian lightweight steel framing industry.

CMHC Project Officer : *Jessica Li*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 2431 0900002
STATUS : Ongoing

POTENTIAL ELEMENTS OF A HUMAN RESOURCES DEVELOPMENT STRATEGY FOR THE RESIDENTIAL CONSTRUCTION INDUSTRY

This project's objective is to briefly discuss the unique challenges confronting the housing sector in terms of labour supply and to outline the main components of a human resources development strategy for the residential construction industry. The paper is intended to form the basis of discussion at an upcoming facilitated workshop wherein the potential elements of a human resources development strategy for residential construction will be further refined and developed.

CMHC Project Officer : *David D'Amour* ***CIDN*** : 2500 0100001
Division : Strategic Planning Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

PRODUCTIVITY TRENDS IN THE CONSTRUCTION SECTOR IN CANADA: A CASE OF LAGGING TECHNICAL PROGRESS

The objective of this report is to provide a detailed examination of productivity trends in the construction industry in Canada, with particular reference to residential construction, in order to shed light on the lagging productivity in the sector.

Both labour and total factor productivity growth in the total and residential construction sectors in Canada have been negative over the past two decades. This report provides a detailed examination of output, employment, and productivity trends in the construction sector in Canada and by province, with particular attention to the residential construction sector. It puts forth a number of variables to explain these trends and tests these explanations in a regression model. In addition, the report looks at other potential explanatory factors for which time series are not available, with particular reference to measurement issues and technical change; discusses the micro- and macro-economic environment affecting productivity performance in the construction sector; examines the prospects for productivity growth in the construction sector; and makes a number of recommendations for future work. The major conclusion is that lagging technical progress appears to lie at the root of the construction sector's poor productivity performance. In addition, measurement problems have also likely contributed to the poor measured productivity performance in the sector.

Final Report prepared by the Centre for the Study of Living Standards. CMHC Project Officer: Eric Tsang. Ottawa: Canada Mortgage and Housing Corporation, 2001. ca 350 pages

STATUS : New Completed Report
AVAILABILITY : NOTE: Available on a loan basis only from: Canadian Housing Information Centre

SUPPLY OF LABOUR IN THE RESIDENTIAL CONSTRUCTION INDUSTRY

The purpose of this project is to increase awareness and understanding of the impacts of labour shortages on housing markets, and to explore the information, tools and techniques required to better manage residential construction labour supply.

CMHC Project Officer : *David D'Amour* ***CIDN*** : 2357 0100001
Division : Strategic Planning Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

DISINVESTMENT AND THE DECLINE OF URBAN NEIGHBORHOODS

Disinvestment and decline occur in inner city neighbourhoods throughout North America. The process is often associated with poverty, high levels of crime, conversion of single family to multi-family housing units, abandonment of the housing stock, and out-migration (movement of the middle class from inner city neighbourhoods to the suburbs). Other features of neighbourhood disinvestment and decline are mortgage redlining, exit of retail business, conversion to lower forms of non-residential land uses such as marginal business operations and specialized services for the poor, decline in relative or absolute land values, and in migration by economically marginalized populations.

This research examined the processes of urban disinvestment and decline with four objectives:
-- to develop an understanding of forces and factors that trigger and accelerate decline;
-- to create a framework for action that can stem and reverse decline;
-- to examine the role of investment in housing as a primer of regeneration; and
-- to identify opportunities for concrete action involving partnerships.

The research aims to inform the development of public policy, primarily at the local and municipal levels, by articulating a range of policies that can work to prevent or reverse inner city decline.

The research comprises four main sources of information: a literature review, key informant interviews in six cities, group interviews in two cities, and analysis of Statistics Canada data. Together, the case studies: examine the extent to which the experience of the six selected cities conforms to the literature; identify the range of responses to urban decline being implemented in the Canadian context and evaluate them; and identify best practices in urban revitalization and renewal.

Ottawa: Canada Mortgage and Housing Corporation, 2001. (Research Highlight: Socio-Economic Series; 90). 6 pages Order number: 62512

NOTE : Aussi disponible en français sous le titre : Le désinvestissement et le déclin des quartiers en milieu urbain

STATUS : Completed Research Highlight
AVAILABILITY : CMHC Information Products and the web

ENVIRONMENTAL SCAN OF HOUSING SECTOR GIS PRACTICES

This project's objective is to perform an environmental scan of housing sector GIS practices.

CMHC Project Officer : *Roger Mareschal* ***CIDN*** : 2392 1000001
Division : Market Analysis Centre ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

HOUSING NEEDS OF LOW-INCOME PEOPLE LIVING IN RURAL AREAS

This project is intended to be a preliminary investigation of the housing needs of low-income people living in rural areas, including the existence of homelessness. The methodology includes a statistical profile, mainly from the Census, but supplemented by any surveys which have been done by the provinces/territories and by qualitative research to more finely identify issues affecting very low income or otherwise vulnerable households.

CMHC Project Officer : *Anna Lenk* ***CIDN*** : 2367 0200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IDENTIFICATION OF KNOWLEDGE GAPS IN DISASTER INFORMATION FOR HOUSEHOLDERS IN CANADA: FINAL REPORT

This short survey project assembled and reviewed existing housing information related to 'disasters' to assess if and where additional research may be required. The review concentrated on housing and housing issues. This research investigates information prepared for householders by organizations in Canada, the United States, Britain, Australia and France. Material was collected and analyzed for the following fifteen threats: avalanches; cold waves; drought; earthquakes; forest fires; house fires; flooding; hail; heat waves; landslides/mudslides; multiple coverage; power outages; tornadoes, torrential rain; and winter storms. The report assesses the suitability of the information for the intended audience and identifies gaps in the current consumer information.

Prepared by John Newton. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Don Fugler. Toronto: John Newton Associates, 2001. 82 pages

STATUS : New Completed Report

AVAILABILITY : Available on an interlibrary loan basis from: Canadian Housing Information Centre

INTERGENERATIONAL HOUSING TRENDS AND CHALLENGES

This project's objective is to complete an issue paper on intergenerational housing trends and challenges.

CMHC Project Officer : *Leanne Elliott*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 2409 0100001

STATUS : Planned

NATIONAL CONSULTATION TO EVALUATE "HOME$AVE" AN ASSET-BASED APPROACH TO ANTIPOVERTY USING HOUSING AS A CATALYST

The objective of this project is to undertake a consultation to evaluate an asset-based antipoverty strategy using housing as a catalyst. The Home$ave consultation will validate the assumption that low-income individuals will respond to financial incentives to engage in a range of activities related to housing.

CMHC Project Officer : *Julie Bernier*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 2498 0100001

STATUS : Ongoing

NEW

SPECIAL STUDIES ON 1996 CENSUS DATA

This project is composed of developing a series of concise studies that explore the housing conditions reported in the 1996 Census of Canada. Eight studies are currently completed and available on the CMHC web site:

- Research Highlights Issue 55-1 Canadian Housing Conditions uses data primarily at the national level, explains commonly used terminology, and examines the largest groupings of households.
- Research Highlights Issue 55-2 Housing Conditions in Metropolitan Areas examines Canada's 25 Census Metropolitan Areas.
- Research Highlights Issue 55-3 Housing Conditions of Immigrants discusses the housing conditions of households whose primary maintainer is an immigrant to Canada.
- Research Highlights Issue 55-4 Housing Canada's Children examines the housing environment of Canada's children.
- Research Highlights Issue 55-5 Changes in Canadian Housing Conditions, 1991-96 examines changes in the housing conditions of non-farm, non-Native households between the 1991 and 1996 Censuses.
- Research Highlights Issue 55-6 Housing Conditions of Native Households examines the housing conditions of households defined as Native using the self-identification definition available in the Census for the first time in 1996.
- Research Highlights Issue 55-7 Canadian Households in core housing need and spending at least half their income on shelter, profiles the characteristics of these Canadian households which in 1996 constituted under 7% of the 9.8 million households studied, or about 38% of the 1.7 million households in core housing need.
- Research Highlights Issue 55-8 Seniors' Housing Conditions examines the housing conditions of households led by persons 65 years of age or older.

CMHC Project Officer : *Ian Melzer* ***CIDN*** : 1988 0200003

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Research highlights are available

ACT REGIONAL STAKEHOLDER INFORMATION SESSIONS

Ten information sessions were held across Canada to inform housing stakeholders of regulatory reform solutions that have been generated under the Affordability and Choice Today program. The intent was to encourage replication of these solutions. Stakeholders included municipalities, home builders, non-profit housing groups and other housing specialists. Forums were held in Saint John, Halifax, Quebec, Montreal, Toronto, Sudbury, Winnipeg, Saskatoon, Vancouver and Victoria.

STATUS : Completed

AVAILABILITY : There will be no product for this project

AFFORDABLE HOUSING ADVISOR

This project will assemble an electronic database of strategies and ideas that have been successfully used to improve housing affordability. These strategies will appear under categories of activity such as: Policy and Regulation; Housing and Community Design; Construction and Technology; Operations and Management; and Redevelopment. Each strategy will be explained and illustrated with example projects. When completed, it is intended that the database will be accessible through the CMHC web site and will be fully searchable and linked to relevant sources of information of the strategies and examples. The sources will include CMHC reports, publications by other organizations and individuals and web sites of public, non-profit and non-government organizations.

CMHC Project Officer : *Fanis Grammenos*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2053 0200004
STATUS : Ongoing

AFFORDABLE HOUSING IN VANCOUVER FOR PEOPLE LIVING WITH HIV/AIDS = DES LOGEMENTS ABORDABLES À VANCOUVER POUR LES PERSONNES VIVANT AVEC LE VIH/SIDA

Wings Housing Society opened the Bonaventure, an affordable housing project for persons living with HIV and AIDS, on January 21, 1999. This project took less than one year from conception to ribbon snipping. The speed at which this project was brought on stream reflects the housing crisis being faced by hundreds of Vancouver residents living with HIV disease. The Bonaventure provides housing for 57 people in roomy, affordable apartments located adjacent to some of the country's best clinical and social support services. This report chronicles the conception and implementation of the Bonaventure project and highlights the use of innovative renovation of existing historic buildings with unusually high density allowances as a way to provide affordability, choice and quality housing to some of Canada's most marginalized individuals.

Case study written by Katherine Taylor, Options Consulting, Wings Housing Society. Prepared for: Federation of Canadian Municipalities; Canadian Home Builders' Association; Canadian Housing and Renewal Association; Canada Mortgage and Housing Corporation. Ottawa: FCM; CHBA; CHRA; CMHC, 2001. (Affordability and Choice Today (ACT) Demonstration Project. ACT Case Study) 35 pages

Order number: 62340

STATUS : New Completed Report
AVAILABILITY : CMHC Information Products

REFINING OF CMHC HOUSING AFFORDABILITY INDICATORS

The purpose of this project is to undertake a study to refine CMHC housing affordability indicators.

CMHC Project Officer : *Louis Trottier*
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available

CIDN : 2320 1000001
STATUS : Ongoing

HOUSING AND IMMIGRATION

METROPOLIS CENTRES OF EXCELLENCE FOR RESEARCH ON IMMIGRATION ISSUES

CMHC and other federal departments provide ongoing financial support to stimulate and support policy-relevant research on immigration issues, through a network of research centres in Canadian universities. Information on Metropolis and on the almost 200 funded research projects can be found at <canada.metropolis.net>.

CMHC Project Officer : *Jim Zamprelli* ***CIDN*** : 2564 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is available on the web

STUDY ON THE RESIDENTIAL INTEGRATION OF IMMIGRANT YOUTH IN MONTRÉAL

The purpose of this project is to study and propose solutions to the problem of integrating immigrant youth in Montréal.

CMHC Project Officer : *Kim-Anh Lam* ***CIDN*** : 2316 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING AND TAXATION

TAXATION OF RESIDENTIAL PROPERTY IN CANADA

The system of taxation in Canada has become increasingly complex over the past several decades. Taxes include federal, provincial and municipal, or local, taxes. The federal government levies personal and corporate income taxes, other corporate taxes like payroll and capital taxes, a value-added tax (the Goods and Services Tax), and excise taxes. The provincial governments also collect personal and corporate income taxes, but generally follow the rules set out by the federal government. Provincial governments also levy sales taxes or participate in the federal value-added tax and collect taxes such as land transfer taxes. Local governments generally only collect property taxes and certain fees.

Many of these taxes affect the production, ownership and use of housing, and decisions surrounding these functions. This report sets out and explains tax provisions relating to housing providers, owners and renters. Section 2 presents the taxation of producers (e.g., home builders and multiple-unit residential builders.) Section 3 identifies the taxation of owners of rental housing (e.g., corporations -- both principal business corporations and not, real estate investment trusts, and individuals). Finally, section 4 discusses the taxation of the occupant individuals of owned and rented housing. Section 5 summarizes the criteria, methodology, and possible research questions that could be explored, with particular focus on the taxation of the providers of rental housing. By presenting the tax provisions by economic function, rather than by taxation type, the focus is comparisons across alternative forms that these economic activities take, as well as providing a better framework to analyze the impact of the tax provisions on housing-related economic activities.

Prepared by Kenneth J. Klassen and Stanley N. Laiken. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Eric Tsang. Ottawa: CMHC, 2001. 66 pages

STATUS : New Completed Report **AVAILABILITY :** On a loan basis from: Canadian Housing Information Centre

ASSESSMENT OF PREFABRICATED BUILDING SYSTEMS INDUSTRY

This study will research the prefabricated building industry in Sweden and Finland.

CMHC Project Officer : *Louis Musto*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 1979 0200002
STATUS : Ongoing

CANADIAN BUILDING PRODUCT DISTRIBUTION CENTRE IN SOUTHERN CHINA

This project's purpose is to conduct a detailed feasibility plan to establish a Canadian building product distribution centre in southern China.

CMHC Project Officer : *Marion A Rasmussen*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 2174 0900001
STATUS : Ongoing
NEW

CANADIAN HOUSING EXPORTERS IN THE KOREAN HOUSING MARKET

The objective of this project is to analyze the Korean housing market and to identify market potentials and opportunities for Canadian housing exporters in the Korean housing market.

CMHC Project Officer : *Jay Thakar*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 2332 0900001
STATUS : Planned
NEW

CONTRIBUTION TO A STUDY ON PACIFIC RIM MARKETS FOR TERMITE-RESISTANT WOOD PRODUCTS

The objective of this project is to study the Pacific Rim markets for termite-resistant wood products.

CMHC Project Officer : *Jay Thakar*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 2104 0900001
STATUS : Ongoing

DEVELOPMENT OF A GUIDE TO THE UNITED KINGDOM BUILDING REGULATIONS

The objective of this project is to develop a guide on the building regulations in the United Kingdom.

CMHC Project Officer : *Terry Robinson*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 1953 0900
STATUS : Ongoing

DEVELOPMENT OF AN EXPORT TOOL-KIT FOR CHINA

This project's objective is to prepare a comprehensive assessment and collection of information pertaining to the export of Canadian housing product to China.

CMHC Project Officer : *Murray Rasmussen*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 2347 0900001
STATUS : Ongoing

GUIDE TO THE RULES UNDER THE NORTH AMERICAN FREE TRADE AGREEMENT AND U.S. IMMIGRATION LAW FOR CANADIAN COMPANIES IN THE HOUSING, RENOVATION AND RESIDENTIAL CONSTRUCTION SECTOR

This guide outlines the procedures as well as the criteria for those currently engaged in residential renovation, manufactured housing production, and the construction of on-site residential homes that must be met for those seeking temporary entry to the United States under the North American Free Trade Agreement (NAFTA) and U.S. immigration law. This guide is intended to provide general information about the NAFTA and U.S. immigration rules and regulations. Questions most asked by Canadian new home builders, manufacturers and renovators are included as a preamble to the guide.

Ottawa: Canadian Home Builders' Association, Canadian Manufactured Housing Institute with the assistance of Canada Mortgage and Housing Corporation, 2000. vi, 28 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Home Builders' Association

HOUSING MARKET GUIDES ON FOUR CITIES IN THE UNITED STATES

This project's objective is to prepare individual Market Guides for four cities in the United States: Boston, Chicago, Dallas, and Seattle.

CMHC Project Officer : *Sanjar Farzaneh*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 2466 0900001
STATUS : Ongoing

HOUSING MARKET RESEARCH: OPPORTUNITIES FOR CANADIAN TRAINING PROGRAMS IN CHINA

The objective of this project is to research the needs and market potential of training programs in the housing sector in China, in order to respond to an emerging demand by Canadian exporters and Chinese clients.

CMHC Project Officer : *Marion A Rasmussen*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 2455 0900001
STATUS : Ongoing
NEW

STUDY OF THE MIDWEST BUILDING PRODUCTS MARKET IN THE REGIONS OF ILLINOIS, WISCONSIN AND MISSOURI

The purpose of this project is to undertake a study to provide Canadian companies with a general overview of the market forces within the building products sector in the three state regions of Illinois, Wisconsin, and Missouri.

CMHC Project Officer : *Carol M Kerley*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 2172 0900001
STATUS : Ongoing

TIPS ON THE SELLING IN THE U.S. GREEN HOUSING MARKET

Do you have a housing system or building product that reduces environmental impacts or contributes to occupant health and safety? There may be a market for you in the United States.

Housing markets in the United States are increasingly adopting a build green strategy to give consumers what they want. Canada Mortgage and Housing Corporation (CMHC) prepared this booklet to help you tap into those markets. The booklet provides a definition of green building, outlines basic steps to take to learn about the U.S. green housing market, and includes a listing of green building programs. It covers distributors and retailers, directories and product certification, conferences and events, key contacts and other marketing considerations.

Ottawa: Canada Mortgage and Housing Corporation, 2002. 36 pages

Order number: 62870

NOTE : Publié aussi en français sous le titre : Conseils pour vendre dans le marché de la construction écologique aux États-Unis

STATUS : New Completed Report
AVAILABILITY : CMHC Information Products and on CMHC's web site

UPDATE OF THE STUDY ON MID-ATLANTIC BUILDING MATERIALS MARKET

To support an update of the study entitled "Business Opportunities for Canadian Building Materials Manufacturers in the Mid-Atlantic Region of the U.S. of America" with new actual and forecast data.

CMHC Project Officer : *Carol M Kerley*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 2228 0900001
STATUS : Ongoing
NEW

USER INTERFACE FOR CD-ROM ON MARKET GUIDES TO THE U.S.

This project's objective is to design the interface for users of a CD-ROM containing market guides to the Unites States and to convert the files for transfer on the CD-ROM.

CMHC Project Officer : *Louis Musto*
Division : CMHC International
AVAILABILITY : Product is not yet available

CIDN : 1953 0900012
STATUS : Ongoing
NEW

HOUSING FORECASTING AND DEMAND

ESTIMATION OF CORE HOUSING NEED USING THE SURVEY OF HOUSEHOLD SPENDING MICROFILE

This External Research Program project is aimed at developing a methodology for tracking housing conditions and need between censuses using the latest (1999) Survey of Household Spending (SHS) file. The contractor will carry out research at Statistics Canada with the internal SHS working file to examine how to apply CMHC's indicators for housing affordability, adequacy, and suitability and the integrated indicator of core housing need to the SHS. The contractor will, in the process, identify and examine the nature of any problems associated with small SHS sample size, suggesting workarounds where possible, at the same time as evaluating the longer term potential to expand the survey sample.

CMHC Project Officer : *John Engeland*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200016
STATUS : Ongoing

HOUSING MARKET

ASSESSMENTS OF EFFECTS OF GRAIN ELEVATOR CLOSURES IN SASKATCHEWAN

This project's objective is to evaluate the effects of closures (and restructuring) of grain elevators recently announced by the Saskatchewan Wheat Pool.

CMHC Project Officer : *Gary MacDonald*
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available

CIDN : 2118 1000001
STATUS : Ongoing

ETHNIC CHANGES AND THE HOUSING MARKET IN RIVIÈRE-DES-PRAIRIES, MONTRÉAL

This project's objective is to provide an understanding of the residential building depreciation mechanism in order to find out the share of the effects of ethnicity in relation to the general economic conditions prevailing on the market in Rivière-des-Prairies, Montreal.

CMHC Project Officer : *Philippe LeGoff*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200007
STATUS : Ongoing

IMPACT OF CONVERSIONS OF RENTAL TO OWNERSHIP UNITS ON HOUSING MARKETS IN ONTARIO

This study seeks to generate a framework for addressing the changes in the availability of affordable housing stock in large Ontario cities through conversions of rental units and, by extension to understand the impact of these conversions on other components of the housing market, in particular the new homes market.

CMHC Project Officer : *Alain Miguelez*
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available

CIDN : 2226 1000001
STATUS : Ongoing

HOUSING MARKET

INVESTOR CONDOMINIUM MARKET IN VANCOUVER, BURNABY, AND RICHMOND

The objective of this project is to undertake a detailed study of the investor condominium market in Vancouver, Burnaby, and Richmond. The study will identify the number of investor condominiums in these areas, as well as the rental rates and vacancy rates.

CMHC Project Officer : *Cameron Muir*
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available

CIDN : 2283 1000001
STATUS : Ongoing
NEW

STUDY ON THE RESIDENTIAL PATH OF PEOPLE AGED 45 TO 64 YEARS IN THE MONTRÉAL AND QUÉBEC CENSUS METROPOLITAN AREAS (CMAS)

This project's objective is to provide a study on the residential path of people aged 45 to 64 years in the Montréal and Québec census metropolitan areas (CMAs).

CMHC Project Officer : *Sandra S Girard*
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available

CIDN : 2293 1000001
STATUS : Ongoing
NEW

SURVEY AND LITERATURE REVIEW OF SOCIOECONOMIC TRENDS AFFECTING CONSUMERS AND HOUSING MARKETS

This research project will review what is known and what has been analyzed in regard to important existing and emerging socioeconomic trends and how they might affect consumers and housing markets over the next 5 years. The contractor will provide views regarding what needs to be researched and criteria to be applied in setting research priorities in this area.

CMHC Project Officer : *Ian Melzer*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : N/A
STATUS : Ongoing
NEW

HOUSING RESEARCH

DIRECTED RESEARCH EVALUATION REPORT

This study investigated the economic benefits of the Directed Research (DR) and related information transfer of the Canada Mortgage and Housing Corporation (CMHC). The intent was to determine whether there is a positive economic return to Canadian society from CMHC's investment in the DR. This study was commissioned in response to a Treasury Board request for a further evaluation of CMHC's research, information and communications function following a 1994 evaluation study. The 1994 evaluation concluded that DR was relevant and produced high quality and useful research. The current study builds on that earlier evaluation by seeking to quantify the benefits of CMHC's DR. It does not include analysis of other CMHC research: e.g., for market analysis and export development, or CMHC's Responsive Research Programs (the External Research Program and the Housing Awards Program).

This study used a partial benefit/cost (B/C) methodology that compared the benefits of a small number of research areas expected to have large net benefits to the total costs of CMHC DR. An iterative process was used to identify cases in which the benefits were likely to be large, the benefits

could be quantified in dollar terms, there was a discrete set of uses and users for the research results, the impacts could be clearly attributed to use of the research results or participation in the research, and CMHC's DR had a significant role in creating the impacts. Four cases of research impacts were investigated in detail, and five other cases were also examined at the study design stage. The four cases for which net benefits were estimated were British Columbia wood-frame moisture damage, brick veneer steel studs, mandatory fire sprinklers, and northern water microsystems.

The findings indicate that CMHC's DR will likely provide significant benefits to Canada over the next several decades, and represent a positive return from CMHC's housing research.

Prepared by KPMG Consulting LLP for Audit and Evaluation Services. Ottawa: Canada Mortgage and Housing Corporation, November 2001. 36 pages

NOTE : Aussi disponible en français sous le titre : Rapport d'évaluation de l'activité de recherche commandée

STATUS : New Completed Report
AVAILABILITY : Product is available on the web

MORTGAGES AND HOUSING FINANCE

EVOLVING IMPACT OF E-COMMERCE ON HOUSING FINANCE ACCESS AND AFFORDABILITY: US EXPERIENCE AND LESSONS FOR CANADA

The objective of this research is to examine the significant changes arising in the housing finance market place resulting from e-commerce and their impact on housing finance access and housing affordability. An overview of experience to date and international comparisons with the US will be instructive to Canadian stakeholders being impacted by this growing trend. The research project will entail a literature review, Internet searches, interviews and discussions with knowledgeable US and Canadian industry participants, government regulatory agencies, housing sector stakeholders and other key informants.

CMHC Project Officer : *Ian Melzer*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2389
STATUS : Ongoing

PERSONS WITH DISABILITIES

DETERMINING THE EFFORT NEEDED BY ADULTS AND SENIORS TO CLIMB RAMPS USING MANUAL WHEELCHAIRS

The objective of this research is to determine the effort needed by adults and seniors to climb ramps using manual wheelchairs.

CMHC Project Officer : *Luis Rodriguez*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2305 0200019
STATUS : Ongoing

EXAMINING THE HOUSING CHOICES OF INDIVIDUALS WITH DISABILITIES

Many individuals with disabilities are concerned about the limited types of housing options available for persons with disabilities. However, information on the living arrangements and housing preferences of individuals with disabilities is limited. To begin to understand the situation better, this exploratory survey research study examines the housing choices of persons with mobility and/or agility disabilities living in Regina. The study provides information on the current living arrangements of individuals with disabilities; determines if there are individuals who could benefit from more accessible housing; explains what the term "more accessible housing" means in Regina and develops a profile of those people who could benefit from more accessible housing.

Prepared by Janice Solomon. This study was managed by the City of Regina with advice and assistance from the Advisory Committee on Access and the Department of Sociology and Social Studies, University of Regina. CMHC Project Officer: Thomas Parker. Ottawa: Canada Mortgage and Housing Corporation, 2002. (External Research Program Research Report) ca. 38 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

MAJOR MAINTENANCE AND RESIDENTIAL RENOVATION: A SURVEY OF MEANS TO IMPROVE THE ARCHITECTURAL ACCESSIBILITY OF EXISTING BUILDINGS

The objective of this project is to study the extent to which it is possible to integrate architectural accessibility into existing residential buildings during major maintenance or common renovation work planned by an owner.

CMHC Project Officer : *Rachelle Luengas*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2021 0200001
STATUS : Ongoing

SPACE EFFICIENT UNIVERSAL DESIGN INNOVATIONS

The research will evaluate design innovations which have been developed specifically to enhance access for people who use wheelchairs.

CMHC Project Officer : *Thomas Parker*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2009 0200001
STATUS : Ongoing

POPULATION HEALTH

DEVELOPMENT OF A RESEARCH FRAMEWORK FOR POPULATION HEALTH AND HOUSING

The National Housing Research Committee is interested in the possible links between housing and health status at the population level. This project begins to address the lack of comprehensive research in the area. More specifically, it will summarize what is known using existing literature reviews, recent unreviewed literature, current work underway. Based on this, the project will: develop a theoretical framework using accepted concepts and definitions where they exist, assess the difficulties of research in this area and identify areas with most promise, assess institutional research capacity for mounting a program of research in this area, and write a research proposal, for submission to a funding body, whereby NHRC could partner.

CMHC Project Officer : *Phil Deacon*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2489 0600001
STATUS : Ongoing

REGULATORY REFORM

OPPORTUNITIES FOR IMPROVING THE INSPECTIONS PROCESS, CITY OF VANCOUVER, BRITISH COLUMBIA = OCCASIONS D'AMÉLIORER LE PROCESSUS D'INSPECTION, VILLE DE VANCOUVER (COLOMBIE-BRITANNIQUE)

In the mid-1990s, the building regulatory process in Vancouver was identified as very complex and time consuming. Although the major duplication and red tape issues were found in the planning approval process, building inspections could also be a problem. Trade and building inspection functions were separate, data recorded in the field had to be re-recorded later, information needed on site was only available at the municipal office, and interpretation of requirements could vary from one person to another.

In 1994, the City of Vancouver started an ambitious program to fundamentally change and improve its services, an initiative it called the "Better City Government Program." Redesign of the planning and inspections process represented a central element of this program. Within the inspections area, a team was set up to re-think what the goals and functions of construction site inspections really were, and how they could best be accomplished.

The project produced benchmarking information of best practices, based on six other municipalities in Canada, the United States and Australia, plus the Workers' Compensation Board of British Columbia. The team also produced a proposed process for inspections, including flow charts that concentrated on value-added work and expanded the responsibilities of inspectors. Their "Day-in-the-Life" description emphasized site use of cell phones, laptop computers and modems. They also produced a business case, with plans for implementation and cost recovery. Through an assessment of field technologies, field staff isolated pros and cons of different computerized systems and produced practical criteria for judging equipment in the future.

Actual implementation has been delayed by a rethinking of the reorganization of the planning and permitting process. Many elements were also put on hold pending decisions on a major new computerization of Vancouver's overall geographic and permitting functions. However, the project has produced a body of information which leaves the inspections department well positioned to pursue change when those two initiatives are completed. Also, a new "team approach" has been instituted for complex new projects and renovations. So far, the main results have been in speeding up development approvals.

REGULATORY REFORM

Prepared by Rowena E. Moyes. Prepared for: Federation of Canadian Municipalities; Canadian Home Builders' Association; Canadian Housing and Renewal Association; Canada Mortgage and Housing Corporation. Ottawa: FCM; CHBA; CHRA; CMHC, 2001. (Affordability and Choice Today ACT Regulatory Reform Project; ACT Case Study) 31 pages

Order number: 62326

STATUS : New Completed Report
AVAILABILITY : CMHC Information Products

RENOVATION AND INSPECTION

HISTORY OF CANADA'S RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM (RRAP)

The Residential Rehabilitation Assistance Program (RRAP) was announced by the Government of Canada in the spring of 1973 and became operational the following year. It came about because of the dual recognition that the existing housing stock represented an important national asset that needed to be preserved, and that a significant portion of this stock was substandard and occupied by households unable to afford necessary repairs. Over the following 26 years, more than 600 000 dwellings, mostly comprised of self-contained homeowner and rental units, but also a good number of beds in hostels, dormitories, special care facilities and rooming houses, were repaired with RRAP assistance across all regions and areas of the country. During this time, RRAP demonstrated great versatility in adapting to the priorities of the day in achieving a broad range of public objectives from improving the housing conditions of low-income Canadians, neighourhood improvement and employment generation, to meeting the special needs of persons with disabilities and the homeless.

This history is divided into two main parts. The first recounts the evolution of RRAP from its inception to the present day. The second part explores the evolution of critical aspects of RRAP related to need, its design, management and accomplishments, and concludes with an epilogue which reviews reasons for RRAP's durability and explores the need for targeted housing rehabilitation programs in the future.

Prepared by Dale Falkenhagen for Canada Mortgage and Housing Corporation. CMHC Project Officer: Brian Davidson. Ottawa: CMHC, December 2001. xviii, 196 pages

Note : Aussi disponible en français sous le titre : Histoire du Programme d'aide à la remise en état des logements (PAREL) du Canada

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

RENTAL, ROOMING HOUSE AND NON-RESIDENTIAL CONVERSION COMPONENTS OF THE RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM (RRAP PHASE I)

This project's objective is to evaluate the rental, rooming house and nonresidential conversion components of the Residential Rehabilitation Assistance Program to assess the rationale for and impacts of these program components from 1995 to 2000 inclusive.

CMHC Project Officer : *Connie Wilson*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available

CIDN : 2785 0500001
STATUS : Ongoing
NEW

RENOVATION AND INSPECTION

UNDERSTANDING THE MOTIVATIONS OF HOMEOWNERS TO CONVERT THEIR BUNGALOWS IN QUÉBEC CITY SUBURBS

This research will study the motivations that bring homeowners in Québec City suburbs to convert their bungalows. The objectives of this research are to clarify the decision-making process associated with the home conversion projects so as to subsequently develop a theoretical conceptual model apt to describe household behaviour.

CMHC Project Officer : *Pascal Yvan Pelletier*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200021
STATUS : Ongoing

RENTAL HOUSING

ASSESSMENT REPORT ON RENTAL HOUSING TAXATION IN CANADA

The objective of this project is to write an assessment report on rental housing taxation in Canada which will identify all rental housing and related tax provisions; explain how each of these rental housing and related tax operates, including the use of illustrative numerical examples in each and every case; and discuss the generally-accepted criteria and a feasible methodology for determining the appropriateness of the current taxation regime applicable to rental housing.

CMHC Project Officer : *Eric Tsang*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2405 0100002
STATUS : Ongoing

ETHICAL AND SOCIAL FUND INVESTMENTS IN LOWER-TO-MODERATE INCOME AFFORDABLE RENTAL HOUSING IN CANADA: AN ASSESSMENT

This study assesses the feasibility of encouraging equity investment in affordable lower-to-moderate income rental housing (ARH) in Canada, within the framework of a public-private partnership (PPP) model, via ethical or socially responsible investment (SRI) funds and pension funds. The study examines the U.S. model for ARH PPP arrangements, with particular emphasis on the features that relate to equity investment. The structure of the ethical investment industries in both the U.S. and Canada are examined in detail. A number of specific reviews of fund investment structures in the U.S. are undertaken, and the results of a survey of funds in Canada are presented. The regulatory/legislative and investment environments in Canada are assessed. The study explores a number of options for structuring equity investments for ethical funds in Canada. The primary conclusion of the study is that such investments are conceptually feasible but that both the U.S. and Canada have a long way to go in developing the investment framework and incentive structure to facilitate such investments.

Prepared by Alex S. MacNevin. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Lisa Daher. Ottawa. CMHC, 2002. (External Research Program Research Report) 134 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

INTERVENTIONS FOR ROOMING HOUSES, SROS AND TENANTS: FINAL REPORT

Outside of social housing, rooming houses and single room occupancy (SRO) units are the least expensive form of permanent housing, and essential for very low-income single people. The CMHC study, Regulatory Factors in the Retention and Expansion of Rooming House Stock (2000) provided information on a number of strategies to stabilize the rooming house stock, which is under constant threat from a variety of forces.

This study looked at other approaches to conserving rooming house and SRO stock and stabilizing tenancies. A range of initiatives was addressed in seven case studies involving:

-- conflict reduction;
-- public education;
-- community development;
-- building construction; and
-- supportive housing.

Prepared by The Starr Group Inc. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, December 2001. 93 pages

NOTE: No. 102 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : New Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

NON-PAYMENT OF RENTS AND THE HEALTH OF THE RENTAL SECTOR IN QUEBEC

This research will measure the extent and spatial distribution of the non-payment of rents in Quebec and its economic impact on the rental sector; identify the socio-economic and demographic factors that could explain the growth of this phenomenon as observed in the number of actions brought by landlords; analyze the regulations governing the processing of recovery-termination cases in view of improving the current procedures at the Régie du logement.

CMHC Project Officer : *Charles Fortin* ***CIDN*** : 2305 0200018
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ONLINE RESIDENTIAL RENTAL GUIDE

This project's objective is to undertake research and produce content for an online residential rental guide. This guide is intended to provide comprehensive advice to tenants, landlords and rental property managers regarding rights, responsibilities and best practices. It will include checklists, worksheets, and sample forms and letters, with guidance as to geographically appropriate variants. It will also provide links to other web sites and contact information.

CMHC Project Officer : *Ian Melzer* ***CIDN*** : 2507 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet **available** ***NEW***

RENTAL HOUSING

REPAIR NEEDS ASSESSMENT OF RENTAL HOUSING IN THE CITY OF MISSISSAUGA

The purpose of this project is to carry out a study to examine the state of repair needs of rental buildings in Mississauga.

CMHC Project Officer : Greg Goy
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available

CIDN : 2524 0600001
STATUS : Ongoing
NEW

RESIDENTIAL DEVELOPMENT

COMMUNITY DESIGN: AN ANALYSIS OF DENSITY MEANINGS AND DEVELOPMENT OF A DESIGN TOOL

The study will address how Land Use Density (LUD) stipulations can impact and/or interplay with the various other system components of community plan-making, e.g. open space, schools, retail, etc. The project will provide an electronic template or guideline for a web based density visualization methodology by which individuals, groups, community associations, planning design professionals and institutions might engage in constructive dialogue in regards the selection of appropriate built forms for various densities in various planning situations.

CMHC Project Officer : Doug Pollard
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 1998 0200001
STATUS : Ongoing

RESIDENTIAL DEVELOPMENT IN COASTAL COMMUNITIES: ADDRESSING CLIMATE CHANGE THROUGH SUSTAINABLE COASTAL PLANNING

The objectives of this project are: to understand the relationship between coastal development, climate change and sea level rise; determine the policy and planning context, and stakeholder understanding of climate change and the impact of sea level rise on coastal residential development, in a local case study; and to recommend new development guidelines for coastal residential development to adapt to climate change and sea level rise.

CMHC Project Officer : Brian Eames
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200012
STATUS : Ongoing

SENIORS

ÉTUDE DE L'ORIENTATION SPATIALE DANS LES COMPLEXES RÉSIDENTIELS POUR PERSONNES ÂGÉES PRÉSENTANT OU NON DES TROUBLES COGNITIFS

Dementia, with a prevalence of 8% among Canadians aged 65 years and over, diminishes people's ability to find the places where they want to go and consequently limits them on the use of their residential environment. Older people who have dementia are likely to share residential spaces with those who do not, which form the majority. This situation turns out to be problematic with

respect to architectural design. The goal of this descriptive and exploratory study is to generate design criteria to facilitate wayfinding for elderly people living in mixed residences, that is, buildings dedicated both to individuals with and without cognitive problems. Qualitative and quantitative data were obtained on the sites of three urban residences that represent variable degrees of socio-economic affluence. They were drawn from interviews with staff and with residents affected by cognitive problems, and from observing the wayfinding behaviors of selected residents. The results emphasize the devastating impacts of impaired wayfinding abilities on the residents' quality of life. The most problematic situations involved searching for one's own apartment and confusion between floors. These raise concerns over the effects of using repetitive floor layouts, and the absence of architectural landmarks and appropriate signage. To be effective, circulation systems must be clear and well organized. Practical interventions with respect to architecture, wayfinding information, and human environment are suggested, thereby initiating a reflection on the future of residential environments for older people.

Prepared by Romedi Passini ... and others. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2002 printing. (External Research Program Research Report) 66 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

EVALUATION OF OPTIMAL BATH GRAB BAR PLACEMENT FOR SENIORS

This project's objective is to assess different locations and configurations of bathtub grab bars and to identify the safest and most useful options to help independent seniors living in their home to maintain their independence and avoid falls.

CMHC Project Officer : *Luis Rodriguez*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2305 0200021
STATUS : Ongoing

LIFE LEASE HOUSING: CONSUMER DREAM OR CONSUMER NIGHTMARE?

The objective of this research is to answer the question, what form of regulation would protect consumers while not overregulating the industry?

CMHC Project Officer : *Luis Rodriguez*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200009
STATUS : Ongoing

LIFE LEASE OWNERSHIP BY THE ELDERLY OF SUITES WITH CONTINUING CARE SERVICES

The objective of this research is to gather and document the views and preferences of prospective elderly residents for two distinct types of accommodation models. One model being a combination of life leases and support services in a home like environment, and the other a traditional long term care facility. The analysis will be done both before and after occupancy.

CMHC Project Officer : *Luis Rodriguez*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200002
STATUS : Ongoing

SEMINARS ON SENIORS' HOUSING TO THE RESIDENTIAL CONSTRUCTION AND HEALTH CARE SECTORS

This project's objective is to develop and undertake delivery of seminars on seniors' housing to professionals in the Canadian residential and home care sectors. The project was developed to share the results of CMHC's research, programs and other relevant information concerning seniors' housing options.

Included in this project is the development of eight separate modules on different aspects of seniors' housing. To date 27 presentations have been delivered at 20 events. Preliminary evaluation results indicate a very high degree of satisfaction with the seminars and they will continue in 2002 with a focus on the health care industry, architects and home builders.

CMHC Project Officer : *Jim Zamprelli*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2382 0200002
STATUS : Ongoing

TOGETHER INDEPENDENTLY: A HOUSING CONCEPT TO AID THE COMMUNITY INTEGRATION OF SENIORS AND DISABLED ADULTS = ENSEMBLE MAIS AUTONOMES : UN CONCEPT DE LOGEMENT QUI FAVORISE L'INTÉGRATION DES AÎNÉS ET DES ADULTES HANDICAPÉS DANS LA COLLECTIVITÉ

In Shediac, N.B., Alphonse LeGresley conceived and built a unique house that addressed a genuine Canadian housing need. Unfortunately, the Moncton area civil engineer could not persuade anyone to live in his house.

Mr. LeGresley's concept, called "Together Independently", was a duplex-style dwelling in which the occupants of each half shared certain facilities but would otherwise live as if they occupied self-contained units. They would share a kitchen with two fridges, the metered electrical system, the water and sewer systems, the heating system, and could share a central vacuum system.

The clientele for whom he designed the house were seniors and disabled adults, able to live independently with someone nearby they could call on if they took sick or needed help with chores such as housework or shopping. Basically, his house would be occupied by a primary tenant/owner and another tenant willing to act as a companion and helper to the primary occupant. They would share certain living costs, making this an economical arrangement for both.

The project proceeded in three distinct phases. Mr. LeGresley explained his concept to groups representing seniors and the disabled, got their input and adjusted his design to accommodate needs. He explained his plan to municipal officials and obtained the single dwelling designation he sought because it was key to the project's economic viability. Then he secured financing and built the house.

He held an open house that attracted considerable local media attention to the model. He advertised the house and promoted it directly to organizations interested in the needs of seniors and disabled persons. There was interest, but no one wanted to buy or rent the house. In late 1998, he decided to cut his losses and convert the dwelling to a true duplex. In early 1999, the make over was done and the two units were available for rent.

This report describes Mr. LeGresley's concept and suggests reasons why it did not succeed. Left unanswered is the question, "Would it work elsewhere or under different circumstances?"

Case study written by: Word-Works Communications Services. Prepared for: Federation of Canadian Municipalities; Canadian Home Builders' Association; Canadian Housing and Renewal Association; Canada

SENIORS

Mortgage and Housing Corporation. Ottawa: FCM; CHBA; CHRA; CMHC, 1999 c.2001. (Affordability and Choice Today ACT Regulatory Reform Project; ACT Case Study) 37 pages

Order number: 62228

STATUS : New Completed Report
AVAILABILITY : CMHC Information Products

SOCIAL HOUSING

CANADIAN CENTRE FOR PUBLIC-PRIVATE PARTNERSHIPS: SURVEY OF PROJECT CLIENTELES

The purpose of this project is to produce statistical tabulations of the Canadian Centre for Public-Private Partnerships: Survey of project clienteles and conduct statistical tests of significance as specified in the statement of work.

CMHC Project Officer : *Patricia Streich*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available

CIDN : 2452 1500001
STATUS : Ongoing
NEW

EVALUATION STUDY OF THE SHELTER ENHANCEMENT PROGRAM: SEP

The objective of this project is to complete an evaluation of the Shelter Enhancement Program.

CMHC Project Officer : *Patricia Streich*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available

CIDN : 2258 0500002
STATUS : Ongoing

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

IMPACT OF HOUSING CHOICES: CONSUMER INFORMATION ON SUSTAINABLE COMMUNITY PLANNING

The purpose of this project is to develop a consumer-oriented information product comparing the impact of various housing choice scenarios, each with different community planning patterns. Users of this web based product will be able to select among ten Canadian cities. In each city, five typical neighbourhood development patterns and locations within the urban context will be described, highlighting issues such as private vehicle use, access to daily destinations and availability of private space.

CMHC Project Officer : *Susan Fisher*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2280 0200001
STATUS : Ongoing

LANDSCAPE DESIGN AND MAINTENANCE FOR CANADIAN HOMES

The purpose is to develop an updated advisory document on landscape design, construction and maintenance for Canadian homes. CMHC`s last advisory document of this nature, entitled Landscape Architectural Design and Maintenance, was published in 1982. While it offers many practical tips and tools which should be emulated, the update will be more oriented toward a consumer audience, place more emphasis on sustainability and build on recent CMHC research in this area. The document will be completed in 2002 and will be of interest to consumers, landscape architects and the landscape industry.

CMHC Project Officer : *Susan Fisher*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2229 0200001
STATUS : Ongoing

PHASE III - DEVELOPMENT OF A SUSTAINABLE COMMUNITY DESIGN CHARRETTE FOR SOUTH EAST FALSE CREEK, VANCOUVER

This project's objective is to cosponsor a design charrette related to the area of Vancouver known as South East False Creek. The City of Vancouver will develop a generic sustainable community design charrette handbook to help guide further community planning and design efforts.

The handbook will provide a brief overview of sustainable community design charrettes, their purpose, goals and benefits and give guidance on how to decide whether a charrette is appropriate. Topics cover will include, organizational information, communications, logistics, material requirements, time and timing, products, choreography, facilitation, costs etc. The handbook will feature examples of past charrettes, primarily the South East False Creek charrette in Vancouver.

CMHC Project Officer : *Doug Pollard*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2307 0200001
STATUS : Ongoing

SUSTAINABLE COMMUNITY PLANNING AND DEVELOPMENT: DESIGN CHARRETTE PLANNING GUIDE: FINAL REPORT

Design charrettes are becoming increasingly popular as a way to bring a range of expertise and interests together to collaborate on creating innovative design solutions and embody multiple objectives and mutual interests. They give visual form to ideas and policies and can be used to test and refine planning and development policies and directions. Overall, they are a means to obtain the most creative proposals for addressing the most difficult problems in the least amount of time.

This manual is intended as a guide for those who would like to host or otherwise initiate a design charrette process for sustainable community planning. It is directed particularly at the urban planning context but has application to other planning contexts as well.

The opening chapter begins with an introduction to the concepts and elements of sustainable development and 'sustainable community', and the role of design. Design charrettes and charrette-like events are then explored in more detail in terms of their purposes, usefulness and contribution to policy development and community planning. The chapter is intended to provide foundational information regarding sustainability planning, and guidance for deciding how a design charrette can be useful in your local community. The next chapter outlines key issues and steps involved in confirming a 'go ahead' for hosting or otherwise becoming involved with a charrette.

This section examines the decision-making context, allies and resources, ways of building support and promoting the plan, and getting formal approvals. "Readiness Assessments" help you determine whether or not you are ready to proceed and what to do next in accordance with your answers.

Chapter 3, Pre-Charrette Planning: Roll up Your Sleeves, is focused on the host of tasks to be completed in advance of a charrette. It includes sections on the stakeholder community and communications; consultants and facilitators; advance meetings and options; design issues including detailed discussion on the development of the design brief; design team formation and participant selection; time and timing; venue and facilities; support materials; and additional logistics. Sample schedules, products and lists are provided.

The final chapters focus on the choreography, management and documentation of the charrette itself. Guidance and coaching hints for handling all the products of the charrette along with post-charrette communications and presentations is contained in the final chapter.

Prepared for Ian Smith, Planning Department, City of Vancouver and Douglas Pollard, Research Division, Canada Mortgage and Housing Corporation by Fiona S. Crofton, Principal, ORCAD Consulting Group Inc. Ottawa: CMHC, November 2001. 130 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

SUSTAINABLE INTEGRATION OF INFRASTRUCTURE AND BUILDINGS IN MAASTRICHT, THE NETHERLANDS

This project's objective is to conduct and report upon a workshop entitled 'Sustainable Integration of Infrastructure and Buildings in Maastricht, The Netherlands. The project will develop a report which includes the proceedings of a two day discussion and design exercise where European and Canadian experts explore the potential of green buildings to perform as community infrastructure. The report will also include a brief analysis of where Canadian design expertise in this field might find a market niche in European design markets.

CMHC Project Officer : *Doug Pollard*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2310 0200001
STATUS : Ongoing

TESTING CONSUMER RECEPTIVITY TO SUSTAINABLE COMMUNITY DESIGN FOR A DEMONSTRATION-BUILD SITE IN OKOTOKS, ALBERTA

CMHC contribution to develop a computer-based visualization tool that will illustrate and describe the features of a 144-acre demonstration project that adopts sustainable community principles and planning criteria.

CMHC Project Officer : *Susan Fisher*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2363 0200001
STATUS : Ongoing

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

THEORY TO PRACTICE: LESSONS LEARNED FROM THE USE OF PERFORMANCE ASSESSMENT MEASURES TO IMPLEMENT SUSTAINABLE COMMUNITIES: FINAL REPORT

This report provides a review of the lessons learned from practitioners engaged in the development and use of performance assessment measures (PAMs) for sustainable community development through the development of case studies. A PAM involves the use of an indicator and target for achieving a certain desired future state of affairs with respect to promoting the features of sustainable community development. The process of developing and utilizing PAMs is fundamentally important in moving from broad sustainable community visions, goals and objectives to the implementation of specific measures that yield progress. PAMs are a tool for operationalizing sustainable development in a manner that reflects local circumstances. PAMs are used for a wide variety of purposes including public education, internal program and policy review and development, staff and political communications, and relations with the development community to name a few. The establishment of PAMs within an overall sustainable community development and reporting process can be challenging and the report points to a number of methods of establishing an effective program.

Prepared by Steven W. Peck and Ray Tomalty. CMHC Project Officer: Doug Pollard. Ottawa: Canada Mortgage and Housing Corporation, 2002. (External Research Program Research Report) ca. 80 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

WOMEN AND HOUSING

HOUSING OPTIONS FOR RURAL WOMEN LIVING ALONE

This project's objectives are: to identify the unique housing requirements of women living alone in rural areas, the housing options that would meet these requirements, changes required to planning practices and land use regulations that would allow the housing sector to respond to the unique housing requirements of women living alone while respecting the density issues, environmental issues and other factors essential for the preservation of the rural character of life.

CMHC Project Officer : *Anna Lenk*
CIDN : 2437 0200004
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available

YOUTH AND HOUSING

HOW TALOYOAK, NUNAVUT TERRITORY CREATED AFFORDABLE HOUSING FOR YOUTH THROUGH FUNDING PARTNERSHIPS AND THE LESSONS LEARNED = COMMENT TALOYOAK, DANS LE TERRITOIRE DU NUNAVUT, A PRODUIT DES LOGEMENTS ABORDABLES POUR LES JEUNES GRÂCE À DES PARTENARIATS DE FINANCEMENT, ET LES LEÇONS QUE LA COLLECTIVITÉ A TIRÉES DE SON EXPÉRIENCE

Unlike most parts of Canada, where housing an aging population is a pressing public issue, the civic administration of the Spence Bay Hamlet of Taloyoak, Nunavut Territory, is concerned with the

housing needs of youth. In 1996, 42 per cent of the population was aged 14 and under, compared to 13 per cent aged 45 and over. A lack of suitable housing for young adults forces many working youth to live with their parents or grandparents in overcrowded conditions.

To meet the housing needs of youth, the municipality built a 12-unit housing project on land its development corporation leased from the municipality. The project can serve as a model which other northern communities facing similar problems could emulate. The $7,000 awarded to the Hamlet under the A.C.T. program helped document and promote the project for the benefit of other northern communities. This A.C.T. report is particularly instructive in its description of the funding sources Taloyoak tapped to pay for it all and the various difficulties encountered along the way.

Case study written by Louis Primeau, Hamlet of Taloyoak, Nunavut Territory. Edited by Word-Works Communications Services. Prepared for: Federation of Canadian Municipalities; Canadian Home Builders' Association; Canadian Housing and Renewal Association; Canada Mortgage and Housing Corporation. Ottawa: FCM; CHBA; CHRA; CMHC, 2001. (Affordability and Choice Today ACT Case Study) 28 pages

Order number: 62328

STATUS : New Completed Report
AVAILABILITY : CMHC Information Products

LOGEMENT INNOVATEUR POUR JEUNES PERSONNES SANS ABRI: RAPPORT FINAL

This research is aimed at identifying innovative housing projects intended to meet the needs of homeless youth and the factors that make them exemplary projects, based on two main sources of information – a review of the literature and interviews with key people working in this sector.

The needs of homeless youth documented in the literature are extensive and complex. There are often major deficiencies in terms of training and preparation for the job market; emotional and relationship problems frequently result from a difficult life; and surviving as a homeless person may have led to health and substance abuse problems. In addition, it would seem that these youth often have mental health problems.

Recent studies highlight the determining role of housing as a solution to the problems of homelessness. However, while a stable home may be very important, it is clear that, for certain subgroups including youth, support services are necessary. An analysis of effective models for youth reveals the following elements: a safe and affordable home, constant emotional support, a relationship with at least one responsible and trustworthy adult, the opportunity to develop life skills leading to autonomy, and access to services such as training, education, an employment readiness course, and health care including mental health. The studies also show the need for social ties. Participation and control issues were often raised. Examples of projects that encourage participation in project design were collected.

Prepared by Luba Serge. Ottawa: Canada Mortgage and Housing Corporation, 2002. (CMHC External Research Program Report) 57 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

RESIDENTIAL INTEGRATION OF YOUNG MIGRANTS IN QUEBEC

This study concerns the residential integration process of young migrants in Quebec. Residential integration is defined as a process that begins even before young people leave their parents' home and that continues until they are relatively stable in a dwelling; this stability often, but not necessarily, corresponds to the formation of a family unit.

CMHC Project Officer : *Leanne Elliott*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2305 0200005
STATUS : Ongoing

BIBLIOGRAPHIES

Adjustable Rate Mortgages / Prêts hypothécaires à taux flottant

(Rev. 18p., October/octobre 1991)

Building in cold climates / Construction dans les pays froids

(Rev. 9p., December/décembre 1989)

Children in the urban environment / Les enfants dans le milieu urbain

(23 p., January/janvier 1993)

CMHC Scholarship Program: A Bibliography 1947 - 1993 / Le Programme de bourses d'études de la SCHL : une bibliographie 1947 - 1993

(66 p., 1994)

Cohousing /Habitation communautaire

(8p., July/juillet 1996)

Congregate housing / Habitat collectif

(10 p., November/novembre 1991)

Construction industry in Canada / Industrie de la construction au Canada

(Rev. 27 p., January/janvier 1988)

Cooperative housing / Coopératives de logements

(Rev. 40 p., September/septembre 1988)

Crime prevention and architectural design / Design architectural et prévention de la criminalité

(7 p., May/mai 1989)

Crime prevention and urban safety in residential environments / La prévention du crime et la sécurité dans les milieux résidentiels urbains

(12p., September/septembre 1989)

Discrimination and segregation in housing in Canada / Bibliographie sur la discrimination et la ségrégation dans le logement au Canada

(5p., March/mars 1993)

Downtown redevelopment / Réaménagement de centres-villes

(Rev. 26p., January/janvier 1989)

Earthquakes and construction / Tremblements de terre et construction

(20 p., March/mars 1995)

*External Research Program Reports arranged by subject / Rapports du programme de recherche à l'extérieur par sujet

(Rev. 70 p., November/novembre 2001)

Floating Homes and Houseboats / Maisons-bateaux et Bateaux-maisons

(15 p., August/août 1997)

Foundations / Fondations

(17p., January/janvier 1989)

Graduated payment mortgages / Prêts hypothécaires à paiements progressifs

(Rev.3p., October/octobre 1991)

Home equity conversion / Conversion de la valeur nette du logement

(9p., October/octobre 1988)

Home ownership / La propriété d'un logement

(Rev. 28p., August/août 1987)

Homelessness / Sans-logis

(Rev. 61p., June/juin 1998)

Housing and AIDS / Hébergement des personnes atteintes du SIDA
(5 p., September/septembre 1993)

Housing and services for the disabled / Logement et les services pour les handicapés
(Rev. 68 p., April/avril 1992)

Housing conversion and residential intensification / Conversion d'habitations et intensification résidentielle
(Rev. 8 p., October/octobre 1990)

Housing demand / La demande en logement
(22 p., November/novembre 1986)

Housing for immigrants and minorities / Logement pour les groupes ethniques et immigrants
(7 p., May/mai 1993)

Housing for single people / Le logement et les personnes seules
(7 p., October/octobre 1992)

Housing in Canadian municipalities / Logement dans les municipalités canadiennes
(Rev. 44 p., March/mars 1985)

Housing in urban core areas / Logement dans les centres-villes
(Rev. 13 p., January/janvier 1985)

Housing management / Gestion des logements
(Rev. 23 p., January/janvier 1989)

Housing markets / Le marché du logement
(Rev. 36 p., January/janvier 1988)

Housing policy in Canada / Politique du logement au Canada
(Rev. 45 p., January/janvier 1987)

Housing quality / Qualité de logement
(8 p., January/janvier 1988)

Housing renovation / Restauration de quartiers résidentiels
(Rev. 62 p., March/mars 1988)

Housing subsidies / Subventions au logement
(Rev. 49 p., October/octobre 1990)

Impact of inflation on house prices / Effets de l'inflation sur le prix des maisons
(Rev. 5 p., February/février 1995)

Indoor air pollution / Pollution de l'air des habitations
(Rev. 29 p., July/juillet 1990)

Infill housing / Logement résidentiel complémentaire
(Rev. 8 p., March/mars 1990)

Insulation / Isolement
(Rev. 33 p., November/novembre 1991)

Land banks and land trusts / Banques agraires et sociétés foncières
(15 p., November/novembre 1990)

Life cycle costing / Estimations du coût global
(Rev. 9 p., November/novembre 1992)

Lofts / Lofts
(6 p., July/juillet 1996)

Log structures / Constructions en pièce sur pièce
(Rev. 8 p., April/avril 1989)

Low cost affordable housing / Habitation à coût modique
(Rev. 35 p., October/octobre 1989)

Manufactured housing / Habitation préfabriquée
(Rev. 33 p., November/novembre 1986)

Moisture problems in buildings / Humidité dans les constructions
(Rev. 21 p., July/juillet 1990)

Mortgage-backed securities / Titres hypothécaires
(13 p., March/mars 1988)

Mortgage insurance / L'assurance hypothécaire
(11 p., April/avril 1988)

Mortgages / Hypothèques
(Rev. 21 p., August/août 1984)

Native housing / Logement pour autochtones
(42 p., January/janvier 1996)

Noise / Le bruit
(30 p., December/décembre 1991)

Non-profit housing / Le logement à but non-lucratif
(Rev. 19 p., October/octobre 1989)

Playgrounds / Terrains de jeux
(Rev. 30 p., December/décembre 1991)

Post occupancy evaluation / Évaluation après occupation
(13 p., February/février 1989)

Public housing in Canada / Habitations à loyer modéré au Canada
(Rev. 63p., September/septembre 1991)

Public housing in Great Britain / Habitations à loyer modéré au Grande-Bretagne
(17p., September/septembre 1988)

Public/Private Partnerships / Association du secteur public et du secteur privé
(13 p., December/décembre 1989)

Radon and houses / Radon dans les habitations
(Rev. 23 p., July/juillet 1990)

Real estate in Canada / Propriété immobilière au Canada
(Rev. 37 p., September/septembre 1987)

Rent control / Contrôle des loyers
(Rev. 20 p., August/août 1990)

*Rental housing / Logement locatif
(111 p., September/septembre 2000)

Residential development / Développement résidentiel
(Rev. 57 p., July/juillet 1991)

Residential displacement, relocation, and gentrification / Relogement, relocalisation, et embourgeoisement
(19 p., September/septembre 1988)

Residential Rehabilitation Assistance Program / Programme d'aide à la remise en état des logements

(8 p., February/février 1988)

Resource communities / Villes d'exploitation de ressources

(Rev. 15 p., March/mars 1988)

Retirement and life care communities / Collectivités de retraités et communautés fournissant des soins à vie

(Rev. 10 p., March/mars 1990)

Rural housing / Logement rural

(Rev. 18 p., March/mars 1988)

Secondary mortgage markets / Marchés hypothécaires secondaires

(6 p., August/août 1982)

Self-help housing / Autoconstruction

(Rev. 13 p., January/janvier 1989)

Seniors housing / Le logement et les personnes âgées

(Rev. 146 p., October/octobre 2000)

Shared housing / Logement à contrepartie de travaux

(Rev. 11 p., October/octobre 1994)

Solar access rights / Droit au soleil

(Rev. 8 p., October/octobre 1992)

Solar heating / Chauffage solaire

(Rev. 16 p., October/octobre 1992)

Solar houses / Maisons solaires

(Rev. 22 p., October/octobre 1992)

Stackwall and cordwood house construction / Construction de maisons de «bois cordé»

(Rev. 2 p., December/décembre 1992)

*Straw bale housing / Maisons de ballots de paille et mortier

(Rev. 14 p., December/décembre 2001)

Student housing / Logement pour les étudiants

(Rev. 6 p., July/juillet 1989)

Temporary shelter for battered women / L'hébergement temporaire pour les femmes victimes de violence

(Rev. 11 p., May/mai 1991)

Total Quality Management/Qualité totale

(17p., July/juillet 1996)

Underground housing / Maisons souterraines

(Rev. 31 p., October/octobre 1992)

Urban Infrastructure in Canada / L'infrastructure urbaine au Canada

(62 p., April/avril 1989)

Vacation homes / Chalets

(29 p., November/novembre 1991)

Variable-rate mortgages / Les prêts hypothécaires à taux variable

(Rev. 9p., October/octobre 1991)

Ventilation / Ventilation

(Rev. 26 p., September/septembre 1991)

Wind pressure and buildings / Les pressions exercées par le vent sur les bâtiments

(Rev. 13 p., November/novembre 1990)

Women and housing / Les femmes et le logement

(15 p., April/avril1991)

Wood construction / Construction en bois

(Rev. 21 p., August/août 1987)

Youth and Housing / Les jeunes et le logement

(20 p., November/novembre 1998)

TITLE INDEX

2001 COOPERATIVE HOUSING SURVEY, 64

ABORIGINAL HOUSING: LOCAL DESIGN AND MATERIAL, 7

ACT REGIONAL STAKEHOLDER INFORMATION SESSIONS, 72

ADAPTATION OF POTENTIAL HOUSING DEMAND MODEL TO ABORIGINAL COMMUNITIES - AN EXAMPLE, 59

AFFORDABLE HOUSING ADVISOR, 73

AFFORDABLE HOUSING IN VANCOUVER FOR PEOPLE LIVING WITH HIV/AIDS = DES LOGEMENTS ABORDABLES À VANCOUVER POUR LES PERSONNES VIVANT AVEC LE VIH/SIDA, 73

ALTERNATE ABORIGINAL TRAINING DELIVERY OPTIONS, 60

ALTERNATIVE HOME ENERGY SOURCES FOR THE NORTH, 14

ALTERNATIVE WALL SYSTEMS FOR LOW-RISE RESIDENTIAL CONSTRUCTION, 32

ANALYSIS OF THE IMPACT OF ENERGY EFFICIENCY MEASURES IN MULTI-UNIT RESIDENTIAL BUILDINGS, 15

ANALYTICAL MODEL OF EARTH TUBE VENTILATION SYSTEMS, 20

APPLICABILITY OF A CONTINUUM OF CARE MODEL TO ADDRESS HOMELESSNESS, 66

ASSESSING THE PARAMETERS FOR VENTILATION SYSTEMS IN MULTI-UNIT RESIDENTIAL BUILDINGS, 20

ASSESSMENT AND ALTERNATIVE APPROACHES FOR VENTILATION SYSTEMS IN MULTI-UNIT RESIDENTIAL BUILDINGS, 20

ASSESSMENT OF PREFABRICATED BUILDING SYSTEMS INDUSTRY, 75

ASSESSMENT REPORT ON RENTAL HOUSING TAXATION IN CANADA, 84

ASSESSMENTS OF EFFECTS OF GRAIN ELEVATOR CLOSURES IN SASKATCHEWAN, 78

BEST PRACTICE GUIDE - FIRE AND SOUND ASSEMBLIES FOR MULTI-FAMILY BUILDINGS, 23

BEST PRACTICE GUIDE - WOOD FRAME ENVELOPES IN COASTAL CLIMATES OF BRITISH COLUMBIA, 24

BEST PRACTICE GUIDE FOR CURTAIN WALLS, 24

BEST PRACTICE GUIDE FOR EXTERIOR INSULATED FINISHED SYSTEMS (EIFS), 24

BEST PRACTICE GUIDE FOR PRE-CAST CONCRETE WALLS, 12

BETTER BUILDING GUIDE TO INNOVATION IN THE DESIGN AND CONSTRUCTION OF HIGH-RISE RESIDENTIAL BUILDINGS, 25

BONHEUR DU BON AIR - ALONG WITH THE DRAFTING OF AN ACCOMPANYING BOOKLET, 37

BRITISH COLUMBIA HIGH-RISE ENVELOPE DETAILS STUDY, 25

BUILDING ENVELOPE SOLUTIONS - THEORY AND PRACTICE, 33

BUILDING RATING AND LABELING SYSTEMS, 25

CAN/CSA F326-M91 (R1998), RESIDENTIAL MECHANICAL VENTILATION SYSTEMS, 21

TITLE INDEX

CANADIAN BUILDING PRODUCT DISTRIBUTION CENTRE IN SOUTHERN CHINA, 75

CANADIAN CENTRE FOR PUBLIC-PRIVATE PARTNERSHIPS: SURVEY OF PROJECT CLIENTELES, 89

CANADIAN HOME INSPECTORS AND BUILDING OFFICIALS NATIONAL INITIATIVE - PHASE II, 49

CANADIAN HOUSING EXPORTERS IN THE KOREAN HOUSING MARKET, 75

CASE STUDIES OF MAJOR HOME ENERGY RETROFITS, 15

CASE STUDIES OF WATER CONSERVATION INITIATIVES IN MULTIS, 53

CAUSES AND CONDITIONS CONTRIBUTING TO FAMILY HOMELESSNESS AND APPROACHES TO ADDRESSING FAMILY HOMELESSNESS, 66

CHARACTERIZATION OF AIR LEAKAGE, PRESSURE REGIMES AND RESULTANT AIR MOVEMENT IN HIGH-RISE RESIDENTIAL BUILDINGS, 21

CHARACTERIZATION OF ENERGY AND WATER END-USE LOAD PROFILES IN HOUSING: LITERATURE REVIEW, 15

CHARACTERIZATION OF THE STOCK OF CONDOMINIUM BUILDINGS IN CANADA, 26

CLEANING UP YOUR HOUSE AFTER A FIRE, 19

CLEANING UP YOUR HOUSE AFTER A FLOOD AND CLEAN-UP PROCEDURES FOR MOLD IN HOUSES, 41

COMMUNICATIONS & INFORMATION TRANSFER STRATEGY FOR ABORIGINAL GROUPS, 59

COMMUNITY DESIGN: AN ANALYSIS OF DENSITY MEANINGS AND DEVELOPMENT OF A DESIGN TOOL, 86

COMPARING THE PERFORMANCE OF TWO-COAT VS THREE-COAT STUCCO, 33

COMPARISON OF NORTHERN HOUSING COSTS, 43

COMPOSITE MASONRY WALL TIES: FINAL REPORT, 11

COMPREHENSIVE STUDY ON SLAB-ON-GRADE FOUNDATIONS, 9

CONCEPT OF A QUALITY LOCATION AND THE CENTRAL DISTRICTS OF MONTRÉAL, 63

CONDITION SURVEY OF CONDOMINIUMS IN THE GREATER TORONTO AREA (GTA), 26

CONDOMINIUM BUYER'S GUIDE, 32

CONTINUATION OF NORTHERN VENTILATION STUDY, 44

CONTRACT MANAGEMENT COURSE FOR RESIDENTIAL PROPERTY MANAGERS AND BUILDING OWNERS, 48

CONTRIBUTION TO A STUDY ON PACIFIC RIM MARKETS FOR TERMITE-RESISTANT WOOD PRODUCTS, 75

CONVERSION OF HIGH-RISE BUILDINGS TO RESIDENTIAL USE, 26

COOPERATIVE HOUSING PROJECTS IN DIFFICULTY, 64

COST OF CO-OPERATIVE HOUSING, 64

CRISIS SITUATIONS IN COOPERATIVES: INCREASING UNDERSTANDING TO IMPROVE INTERVENTION, 64

TITLE INDEX

DAWSON CITY DEMONSTRATION PROJECT - MONITORING, 21

DEFINING PERFORMANCE OF WATER RESISTIVE BARRIERS, 41

DEMONSTRATION OF FULL-COST ACCOUNTING TOOLS AND TECHNIQUES, 63

DEMONSTRATION OF HEALTHY HOUSING ON RESERVE, 7

DEMONSTRATION OF SAFE HOUSING ON LIGHTLY CONTAMINATED LANDS, 13

DEPRESSURIZATION RESISTANCE TESTING, 37

DESIGN CHARRETTES TRANSFORMING YOUR PRACTICE - INTEGRATED DESIGN CHARRETTES FOR SUSTAINABLE BUILDINGS, 52

DESIGN MULTIPLE-UNIT CHUM'S AND MODULAR HOUSE PACKAGES FOR URBAN AND SUBURBAN, REMOTE AND NORTHERN COMMUNITIES, 35

DETERMINING THE EFFORT NEEDED BY ADULTS AND SENIORS TO CLIMB RAMPS USING MANUAL WHEELCHAIRS, 80

DEVELOP A SET OF ENVIRONMENTALLY SUSTAINABLE SITE AND BUILDING DESIGN, CONSTRUCTION AND OPERATION GUIDELINES FOR SINGLE AND MULTI-FAMILY UNIT HOUSING, MOTELS AND HOTELS FOR THE TOWN OF BANFF, 52

DEVELOPING MATERIAL EMISSIONS STANDARDS FOR ASTM APPROVAL, 37

DEVELOPMENT OF A CEMENT STRESS-SKIN EPS-CORE BUILDING SYSTEM, 27

DEVELOPMENT OF A GUIDE TO THE UNITED KINGDOM BUILDING REGULATIONS, 75

DEVELOPMENT OF A RESEARCH FRAMEWORK FOR POPULATION HEALTH AND HOUSING, 82

DEVELOPMENT OF AN EXPORT TOOL-KIT FOR CHINA, 76

DEVELOPMENT OF AN INSTRUCTOR'S GUIDE AND AN ACCOMPANYING PRESENTATION FOR RESIDENTIAL GUIDE TO EARTHQUAKE RESISTANCE, 33

DEVELOPMENT OF THE HIGH-RISE STATISTICALLY REPRESENTATIVE HOUSING DATABASE (HISTAR), 27

DEVELOPMENT OF THE HIGH-RISE STATISTICALLY REPRESENTATIVE HOUSING DATABASE (HISTAR) TASK 2: COLLECTION OF ADDITIONAL BUILDING FILES FOR THE HISTAR DATABASE, 27

DEVELOPMENT OF TRANSITION TRAINING FOR OBJECTIVE-BASED CODES, 10

DIRECTED RESEARCH EVALUATION REPORT, 79

DISINVESTMENT AND THE DECLINE OF URBAN NEIGHBORHOODS, 70

DUAL FLUSH TOILET PILOT PROJECT, 53

ECO-ASSESSMENT TOOL FOR PROPERTY MANAGERS OF MULTIPLE UNIT RESIDENTIAL BUILDINGS (MURBS), 48

ECONOMIC FEASIBILITY STUDY OF WATER REUSE AND TREATMENT TECHNOLOGIES, 53

EFFECTS OF URBAN ABORIGINAL RESIDENTIAL MOBILITY AND SERVICE PROVISION, 60

ENERGY EFFICIENCY CASE STUDIES OF MULTI-UNIT RESIDENTIAL BUILDINGS, 16

TITLE INDEX

ENERGY EFFICIENCY OPPORTUNITIES MANUAL FOR MULTI-UNIT RESIDENTIAL BUILDINGS, 16

ENERGY GENERATION AND CONTROL AND THE BUILDING ENVELOPE OF MULTI-UNIT RESIDENTIAL BUILDINGS, 16

ENERGY USE OF STRAW BALE BUILDINGS WITH COMPARABLE BUILDINGS OF CONVENTIONAL CONSTRUCTION, 17

ENHANCING THE APPLICABILITY AND USEFULNESS OF CMHC'S HOMEOWNER'S MANUAL FOR NEW HOMES, 66

ENVIRONMENTAL SCAN OF HOUSING SECTOR GIS PRACTICES, 70

ESTIMATION OF CORE HOUSING NEED USING THE SURVEY OF HOUSEHOLD SPENDING MICROFILE, 78

ETHICAL AND SOCIAL FUND INVESTMENTS IN LOWER-TO-MODERATE INCOME AFFORDABLE RENTAL HOUSING IN CANADA: AN ASSESSMENT, 84

ETHNIC CHANGES AND THE HOUSING MARKET IN RIVIÈRE-DES-PRAIRIES, MONTRÉAL, 78

ÉTUDE DE L'ORIENTATION SPATIALE DANS LES COMPLEXES RÉSIDENTIELS POUR PERSONNES ÂGÉES PRÉSENTANT OU NON DES TROUBLES COGNITIFS, 86

EVALUATING HOUSING STABILITY FOR PEOPLE WITH SERIOUS MENTAL ILLNESS AT RISK FOR HOMELESSNESS: FINAL REPORT, 66

EVALUATION OF AN APARTMENT HEAT RECOVERY VENTILATION SYSTEM, 21

EVALUATION OF COOPERATIVE HOUSING, 65

EVALUATION OF OPTIMAL BATH GRAB BAR PLACEMENT FOR SENIORS, 87

EVALUATION STUDY OF THE SHELTER ENHANCEMENT PROGRAM: SEP, 89

EVOLVING IMPACT OF E-COMMERCE ON HOUSING FINANCE ACCESS AND AFFORDABILITY: US EXPERIENCE AND LESSONS FOR CANADA, 80

EXAMINING INUIT SPACE USE IN EURO-CANADIAN HOUSE FORMS, 60

EXAMINING THE HOUSING CHOICES OF INDIVIDUALS WITH DISABILITIES, 81

FEASIBILITY OF DEVELOPING A BUILDING CANADA PROGRAM, 34

FEASIBILITY OF UTILIZING A PORTABLE HOUSING PLANT FOR SINGLE FAMILY DETACHED CONSTRUCTION, 40

FEASIBILITY STUDY ON THE DEVELOPMENT OF A COMMISSIONING GUIDE FOR NEW HOUSES, 34

FIELD TESTING OF A POSITIVE PRESSURE VENTILATION DEVICE, 22

FIELD TESTS OF VENTILATION SYSTEMS INSTALLED TO MEET THE 1993 OBC AND 1995 NBC, 22

FINANCIAL TOOLS FOR CO2 REDUCTION, 17

FIRE AND ACOUSTICAL PERFORMANCE OF FLOOR ASSEMBLIES - PHASE II, 27

FIRST NATIONS HEALTHY HOUSING SUSTAINABLE COMMUNITY DEVELOPMENT SYMPOSIUM, AND UPDATE OF THE 'BEST PRACTICES' PUBLICATION, 8

FIRST NATIONS HOUSING PROPERTY MANAGEMENT TRAINING COURSES AND RESOURCES, 60

TITLE INDEX

FLEXHOUSING FEATURES IN A BENCHMARK HOUSE DESIGN, 36

GOVERNANCE IN LOCAL PARTNERSHIPS TO ADDRESS HOMELESSNESS, 67

GUIDE FOR THE HEALTHY RENOVATION OF A ONE STOREY HOUSE CIRCA. 1960-1979, 50

GUIDE TO THE RULES UNDER THE NORTH AMERICAN FREE TRADE AGREEMENT AND U.S. IMMIGRATION LAW FOR CANADIAN COMPANIES IN THE HOUSING, RENOVATION AND RESIDENTIAL CONSTRUCTION SECTOR, 76

GUIDELINES FOR MOISTURE MANAGEMENT IN EXTERIOR WALL SYSTEMS, 41

GUIDELINES FOR ON-SITE MEASUREMENT OF MOISTURE IN WOOD BUILDING MATERIALS, 42

GUIDELINES FOR THE RETROFIT OF UNINSULATED MASONRY WALLS, 28

HEALTHY HOUSING IN THE NORTH: TOWARDS A NORTHERN HEALTHY HOUSE DEMONSTRATION PROJECT, 44

HEALTHY INDOOR ENVIRONMENTS PHASE 2: CONSULTATION PROCESS, 37

HIRING A HOME INSPECTOR. ABOUT YOUR HOUSE; CE35, 50

HISTORY OF CANADA'S RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM (RRAP), 83

HOUSING CONSTRUCTION INDUSTRY: CHALLENGES AND OPPORTUNITIES FOR THE 21ST CENTURY, 68

HOUSING DISCRIMINATION IN CANADA: THE STATE OF KNOWLEDGE, 65

HOUSING FORM AND QUALITY IN RELATION TO CHILDREN'S MENTAL HEALTH, 62

HOUSING MARKET GUIDES ON FOUR CITIES IN THE UNITED STATES, 76

HOUSING MARKET RESEARCH: OPPORTUNITIES FOR CANADIAN TRAINING PROGRAMS IN CHINA, 76

HOUSING NEEDS OF LOW-INCOME PEOPLE LIVING IN RURAL AREAS, 70

HOUSING OPTIONS FOR RURAL WOMEN LIVING ALONE, 92

HOW TALOYOAK, NUNAVUT TERRITORY CREATED AFFORDABLE HOUSING FOR YOUTH THROUGH FUNDING PARTNERSHIPS AND THE LESSONS LEARNED = COMMENT TALOYOAK, DANS LE TERRITOIRE DU NUNAVUT, A PRODUIT DES LOGEMENTS ABORDABLES POUR LES JEUNES GRÂCE À DES PARTENARIATS DE FINANCEMENT, ET LES LEÇONS QUE LA COLLECTIVITÉ A TIRÉES DE SON EXPÉRIENCE, 92

HYGROTHERMAL MODELLING OF THE INTERIOR INSULATION RETROFIT OF A SOLID MASONRY BUILDING, 17

IDENTIFICATION OF KNOWLEDGE GAPS IN DISASTER INFORMATION FOR HOUSEHOLDERS IN CANADA: FINAL REPORT, 71

IMPACT OF CONVERSIONS OF RENTAL TO OWNERSHIP UNITS ON HOUSING MARKETS IN ONTARIO, 78

IMPACT OF HOUSING CHOICES: CONSUMER INFORMATION ON SUSTAINABLE COMMUNITY PLANNING, 89

IMPLEMENTATION STRATEGIES FOR WATER CONSERVATION, 54

IMPROVEMENTS TO THE MOISTURE PERFORMANCE OF PRESERVED WOOD FOUNDATIONS, 42

TITLE INDEX

INDOOR AIR POLLUTION FROM ATTACHED GARAGES, 38

INDUSTRY PROFILE OF CANADIAN LIGHT STEEL BUILDING, 68

IN-SITU MONITORING OF WOOD-FRAMED EXTERIOR WALL ASSEMBLIES - COQUITLAM, BC, 28

IN-SITU MONITORING OF WOOD-FRAMED EXTERIOR WALL SYSTEMS - VANCOUVER, BC, 42

INSULATED CONCRETE FORMS TRAINING PROGRAM, 9

INTEGRATED DESIGN CHARRETTE IN TORONTO FOR ARCHITECTS AND BUILDING PROFESSIONALS, 28

INTERGENERATIONAL HOUSING TRENDS AND CHALLENGES, 71

INTERVENTIONS FOR ROOMING HOUSES, SROS AND TENANTS: FINAL REPORT, 85

INVESTIGATING AND DOCUMENTING FIRST NATION TECH SERVICES INSTITUTES, 61

INVESTIGATION OF SMOKE CONTROL IN HIGH-RISES BY POSITIVE PRESSURE VENTILATION, 19

INVESTOR CONDOMINIUM MARKET IN VANCOUVER, BURNABY, AND RICHMOND, 79

INVOLVING HOMELESS AND FORMERLY HOMELESS CLIENTS IN PROJECTS AND PROGRAMS TO ADDRESS HOMELESSNESS: FINAL REPORT, 67

ISSUES PAPER ON LIABILITY IN HOUSE CONSTRUCTION, 64

LANDSCAPE DESIGN AND MAINTENANCE FOR CANADIAN HOMES, 90

LEAK-PROOFING WINDOWS, PHASE I - FABRICATION, INSTALLATION AND MAINTENANCE, 13

LEAK-PROOFING WINDOWS, PHASE II - A REVIEW OF STANDARDS TESTING AND CERTIFICATION, 14

LET'S CLEAR THE AIR INDOOR AIR QUALITY (IAQ) INITIATIVE, 38

LIFE LEASE HOUSING: CONSUMER DREAM OR CONSUMER NIGHTMARE?, 87

LIFE LEASE OWNERSHIP BY THE ELDERLY OF SUITES WITH CONTINUING CARE SERVICES, 87

LIVING BY WATER GUIDEBOOK, 52

LOAD PROFILES IN MULTI-UNIT RESIDENTIAL BUILDINGS: PILOT STUDY ON LOAD PROFILING IN METRO TORONTO HOUSING, 29

LOGEMENT INNOVATEUR POUR JEUNES PERSONNES SANS ABRI :RAPPORT FINAL, 93

MAJOR MAINTENANCE AND RESIDENTIAL RENOVATION: A SURVEY OF MEANS TO IMPROVE THE ARCHITECTURAL ACCESSIBILITY OF EXISTING BUILDINGS, 81

MANDATORY HOME INSPECTIONS ON RESALE HOMES IN ONTARIO, 50

MANUFACTURED HOME DESIGN AND LAND LEASE COMMUNITY PLANNING, 40

MANUFACTURED HOUSING CONSULTANTS' TRAINING PROGRAM - PHASE II, 40

MAXIMUM DAY WATER DEMAND REDUCTION MONITORING AND EVALUATION PROJECT, 54

MAXIMUM DAY WATERING DEMAND PHASE II - ASSESSMENT OF WATER CONSERVATION STRATEGIES, 54

MEASURING RESIDENTIAL MOBILITY OF URBAN ABORIGINAL PEOPLE, 61

TITLE INDEX

MERGE THE EXISTING NATIONAL AND PROVINCIAL ASSOCIATIONS INTO ONE NEW NATIONAL ENTITY TO REPRESENT THE PRIVATE HOME AND PROPERTY INSPECTION INDUSTRY ACROSS THE COUNTRY, 51

METROPOLIS CENTRES OF EXCELLENCE FOR RESEARCH ON IMMIGRATION ISSUES, 74

MODELING OF AIR/MOISTURE MOVEMENT AND DURABILITY PERFORMANCE OF RESIDENTIAL AND COMMERCIAL BUILDINGS, 29

MODIFY AND UPGRADE WALLDRY COMPUTER PROGRAM, 29

MOLD CLEANUP PROCEDURES: CONTRACTORS' GUIDE, 43

MONITORING INNOVATIVE MECHANICAL AND ELECTRICAL SYSTEMS, 30

MONITORING OF THE NORTH ON-SITE WASTE WATER RECYCLING MICROSYSTEMS, 45

MONTRÉAL: A GREAT TRADITION OF MEDIUM-DENSITY HOUSING, 36

NATIONAL CONSULTATION TO EVALUATE: AN ASSET-BASED APPROACH TO ANTIPOVERTY USING HOUSING AS A CATALYST, 71

NATIVE INSPECTION SERVICES INITIATIVE (NISI) GUIDE, 8

NOISE ISOLATION PROVIDED BY GYPSUM BOARD PARTITIONS, 9

NON-PAYMENT OF RENTS AND THE HEALTH OF THE RENTAL SECTOR IN QUEBEC, 85

NORTH WEB-SITE, 45

NORTHERN HEALTHY HOUSE DEMONSTRATION, 45

NORTHERN HEALTHY MIXED-USE BUILDING DEMONSTRATION, 46

NORTHERN HEATING AND VENTILATION SYSTEMS, 22

NORTHERN LANDSCAPING: A GUIDE TO RESTORING THE PLANTS AND SOIL IN NORTHERN COMMUNITIES, 46

ONLINE RESIDENTIAL RENTAL GUIDE, 85

OPPORTUNITIES FOR IMPROVING THE INSPECTIONS PROCESS, CITY OF VANCOUVER, BRITISH COLUMBIA = OCCASIONS D'AMÉLIORER LE PROCESSUS D'INSPECTION, VILLE DE VANCOUVER (COLOMBIE-BRITANNIQUE), 82

OPTIMIZING HEAT AND AIR DISTRIBUTION SYSTEMS WHEN RETROFITTING HOUSES FOR ENERGY EFFICIENCY, 18

PERFORMANCE ASSESSMENT OF LOW FLOW TOILETS, 55

PERFORMANCE ASSESSMENT OF THE LEBRETON FLATS DISTRICT HEATING SYSTEM, 23

PERFORMANCE GUIDELINE DEVELOPMENT FOR BASEMENT SYSTEMS AND MATERIALS, 10

PERFORMANCE OF AN INNOVATIVE HIGH-RISE RESIDENTIAL BUILDING, 30

PHASE III - DEVELOPMENT OF A SUSTAINABLE COMMUNITY DESIGN CHARRETTE FOR SOUTH EAST FALSE CREEK, VANCOUVER, 90

POTENTIAL ELEMENTS OF A HUMAN RESOURCES DEVELOPMENT STRATEGY FOR THE RESIDENTIAL CONSTRUCTION INDUSTRY, 69

TITLE INDEX

POUSSIÈRE DOMESTIQUE : UN OUTIL EFFICACE ET ABORDABLE D'ÉVALUATION DE SALUBRITÉ MICROBIENNE RÉSIDENTIELLE : RAPPORT FINAL, 38

PRACTICAL MEASURES FOR THE PREVENTION OF BASEMENT FLOODING DUE TO MUNICIPAL SEWER SURCHARGE, 10

PRINCE EDWARD ISLAND BIRTH COHORT STUDY OF MOLD IN HOMES, 39

PRODUCTIVITY TRENDS IN THE CONSTRUCTION SECTOR IN CANADA: A CASE OF LAGGING TECHNICAL PROGRESS, 69

PUBLIC HOUSING TENANT SELF-MANAGEMENT: AN EVALUATION OF THE ALEXANDRA PARK CO-OP CONVERSION PROCESS IN TORONTO, 65

QUANTIFYING UNIVERSAL DESIGN: A PROGRAM FOR IMPLEMENTATION, 36

RECYCLE: LIFECYCLE - HOW TO RENOVATE A HOME FOR CHANGE, 51

REDUCTION OF AIR INTAKE CONTAMINATION OF HIGH-RISE RESIDENTIAL BUILDINGS, 23

REFINING OF CMHC HOUSING AFFORDABILITY INDICATORS, 73

REMOTE MONITORING AND CONTROL OF ON-SITE WASTEWATER TREATMENT, RECYCLING AND RE-USE SYSTEMS, 55

RENOVATING THE HOME FOR ASTHMA: AN INTERVENTION STUDY, 39

RENTAL, ROOMING HOUSE AND NON-RESIDENTIAL CONVERSION COMPONENTS OF THE RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM (RRAP PHASE I), 83

REPAIR AND RETROFIT CASE STUDIES OF THE LOFTS CORTICELLI COMPLEX, 31

REPAIR NEEDS ASSESSMENT OF RENTAL HOUSING IN THE CITY OF MISSISSAUGA, 86

REQUALIFICATION OF SUBURBS AND REGULATORY FRAMEWORKS: CURRENT SITUATION AND EASING MEASURES, 63

RESEARCH CHAIR IN HEALTH AND INDOOR AIR QUALITY - CARLETON UNIVERSITY, 39

RESEARCH ON SOLUTIONS TO PYRITE-RELATED BACKFILL EXPANSION PROBLEMS, 35

RESIDENTIAL DEVELOPMENT IN COASTAL COMMUNITIES: ADDRESSING CLIMATE CHANGE THROUGH SUSTAINABLE COASTAL PLANNING, 86

RESIDENTIAL INTEGRATION OF YOUNG MIGRANTS IN QUEBEC, 94

RETROFITTING A CITY: A GUIDE FOR MUNICIPALITIES TO IMPLEMENT A BUILDING RETROFIT PROGRAM, 18

REVISION OF HOME CARE: A GUIDE TO REPAIR AND MAINTENANCE, 51

REVISIONS TO BRICK VENEER STEEL STUD BEST PRACTICE GUIDE, 31

REVISIONS TO THE OPERATING GUIDES FOR OWNERS, MANAGERS AND CUSTODIAL STAFF, 48

REWRITING TEST STANDARD CAN/CGSB-149.10 - DETERMINATION OF THE AIRTIGHTNESS OF BUILDING ENVELOPES BY THE FAN DEPRESSURIZATION METHOD, 11

SAFE EFFLUENT WASTEWATER RECOVERY SYSTEM (SEWRS) ERP 2000, 55

TITLE INDEX

SEISMIC PERFORMANCE OF RAINSCREEN STUCCO, 31

SEMINARS ON SENIORS' HOUSING TO THE RESIDENTIAL CONSTRUCTION AND HEALTH CARE SECTORS, 88

SPACE EFFICIENT UNIVERSAL DESIGN INNOVATIONS, 81

SPECIAL STUDIES ON 1996 CENSUS DATA, 72

STANDARDIZATION OF CONCRETE REPAIR PROTOCOLS, 12

STUDY OF TENANT EXITS FROM HOUSING FOR CHRONICALLY HOMELESS PEOPLE, 68

STUDY OF THE MIDWEST BUILDING PRODUCTS MARKET IN THE REGIONS OF ILLINOIS, WISCONSIN AND MISSOURI, 77

STUDY ON THE RESIDENTIAL INTEGRATION OF IMMIGRANT YOUTH IN MONTRÉAL, 74

STUDY ON THE RESIDENTIAL PATH OF PEOPLE AGED 45 TO 64 YEARS IN THE MONTRÉAL AND QUÉBEC CENSUS METROPOLITAN AREAS (CMAS), 79

SUPPLY OF LABOUR IN THE RESIDENTIAL CONSTRUCTION INDUSTRY, 69

SURVEY AND LITERATURE REVIEW OF SOCIOECONOMIC TRENDS AFFECTING CONSUMERS AND HOUSING MARKETS, 79

SURVEY OF MULTI-UNIT RESIDENTIAL BUILDING CHARACTERISTICS AND ENERGY USE DATA, 19

SUSTAINABLE COMMUNITY PLANNING AND DEVELOPMENT: DESIGN CHARRETTE PLANNING GUIDE: FINAL REPORT, 90

SUSTAINABLE COMMUNITY SITE PLAN, INFRASTRUCTURE PLAN AND HEALTHY HOUSE DESIGNS, 8

SUSTAINABLE INTEGRATION OF INFRASTRUCTURE AND BUILDINGS IN MAASTRICHT, THE NETHERLANDS, 91

TAXATION OF RESIDENTIAL PROPERTY IN CANADA, 74

TECHNICAL AUDIT COURSE FOR PROPERTY MANAGERS, 49

TECHNICAL TRANSFER ARTICLE - HIGH RISE FIRE SAFETY CONSIDERATIONS, 20

TECHNOLOGY ROAD MAP FOR INTELLIGENT BUILDING TECHNOLOGIES, 32

TESTING CONSUMER RECEPTIVITY TO SUSTAINABLE COMMUNITY DESIGN FOR A DEMONSTRATION-BUILD SITE IN OKOTOKS, ALBERTA, 91

THEORY TO PRACTICE: LESSONS LEARNED FROM THE USE OF PERFORMANCE ASSESSMENT MEASURES TO IMPLEMENT SUSTAINABLE COMMUNITIES: FINAL REPORT, 92

TIPS ON THE SELLING IN THE U.S. GREEN HOUSING MARKET, 77

TOGETHER INDEPENDENTLY: A HOUSING CONCEPT TO AID THE COMMUNITY INTEGRATION OF SENIORS AND DISABLED ADULTS = ENSEMBLE MAIS AUTONOMES : UN CONCEPT DE LOGEMENT QUI FAVORISE L'INTÉGRATION DES AÎNÉS ET DES ADULTES HANDICAPÉS DANS LA COLLECTIVITÉ, 88

TRANSFORMING YOUR PRACTICE: INTEGRATED DESIGN CHARRETTES FOR SUSTAINABLE BUILDINGS: TORONTO CHARRETTE RESULTS, 52

TITLE INDEX

UNDERSTANDING THE MOTIVATIONS OF HOMEOWNERS TO CONVERT THEIR BUNGALOWS IN QUÉBEC CITY SUBURBS, 84

UPDATE OF THE STUDY ON MID-ATLANTIC BUILDING MATERIALS MARKET, 77

UPDATE THE NORTHERN UTILITY COSTS REPORT, 47

URBAN ABORIGINAL PERCEPTIONS OF ACCESS TO HOUSING, 62

URBAN ABORIGINAL RESIDENTIAL MOBILITY, 62

USE OF COMPRESSED-AIR-FOAM TECHNOLOGY FOR FIRE PROTECTION OF HOUSING IN THE NORTH, 47

USE OF ON-SITE WASTE WATER RECYCLING MICROSYSTEMS FOR SPRINKLER SUPPLY, 47

USER INTERFACE FOR CD-ROM ON MARKET GUIDES TO THE U.S., 77

WATER AND SEWAGE HANDLING SYSTEMS IN NORTHERN AND REMOTE COMMUNITIES, 55

WATER EFFICIENCY CASE STUDIES, 56

WATER QUALITY MONITORING OF THE TORONTO HEALTHY HOUSE, 56

WHY CITIES MATTER: CANADIAN CITY-REGIONS IN A GLOBAL AGE, 63

WOOD USAGE IN STRAW BALE HOUSE CONSTRUCTION, 35

YUKON FLEX/HEALTHY HOUSING DEMONSTRATION, 48